THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

FEBRUARY, 1876.

A THEORY UPON THE ETIOLOGY AND PATHOLOGY OF "MILK FEVER" IN COWS, WITH SOME RECOMMENDATIONS AS TO ITS CURATIVE TREATMENT.

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THE symptoms of this variously termed and often fatal disease, to which the best dairy cows are subject, are so familiar, and have so often been described, that a repetition of them here seems entirely uncalled for. Its ascribed causes are numerous and diverse, and the treatment recommended almost universally one and the same thing. The first *fact* that presents itself in connection with a consideration of this malady, is that it attacks only the good cows—"deep milkers," as they are termed—and them rarely before the third period of parturition. The first *question* that naturally suggests itself is, what are the exciting causes? and therefore it is proposed to at once commence an examination, so far as may be, into its etiology. The cow, shortly before this third period of calving, having reached a full maturity, and being "dried off her milk," or nearly so, is relieved of two considerable drains upon the economy: viz., the completing of the growth of the body and the secreting of a large quantity of milk. To be sure, the conditions of growth and nutrition are the same; but more particles are removed from,

and many more added to, a growing tissue, than to one that simply maintains itself. This relaxation is naturally consumed by subjects having a predisposition to the accumulation of fat: "the production of which," says Dr. Greene,* "is in many cases due to diminished waste, whilst there appears to be in some a special predisposition to become fat." Thus it seems that there always exists one of the two exciting causes—namely, diminished waste; and the "habit," *i.e.*, the large yield of milk, etc., of these subjects, as plainly shows the existence of the other cause —the predisposition. This fat, as well as being increased in the usual situations, enters into the blood in abnormal quantities, and by it is deposited between the fasciculi of muscles in different parts of the body, "constituting a fatty infiltration of them; a condition frequently met with in animals which have been fattened."† The uterus, in the wall of which, when it becomes enlarged by pregnancy, organic muscular fibres, found in a very ill-developed condition in its quiescent state, are enormously developed; its vessels also at this time are greatly enlarged; and from these two facts it would seem that the walls of the organ would get an unusually great supply of blood, a certain change actually going on in its muscular coat, which, at this time, is said even to take on the striated appearance of voluntary tissue. The blood working this change, now abnormally charged with fatty particles, would necessarily leave a certain amount of these particles amongst its fasciculi; "the immediate effect of this interstitial growth is to displace and compress the muscular fibres between which it insinuates itself, and in doing so diminishes the contractile power of the muscle." † So that at the time of parturition, although there is power enough with the help of the throes to expel the fœtus, when this stimulus is removed, the contractile power of the muscle being all that is left, is not sufficient to contract the uterus upon itself, and thus there is left a certain amount of *débris* which, from obvious causes, being retained, goes on to putrefaction. Thus there is applied to a part already highly vascular, and endowed with increased nervous sensibility, a virulent poison, perhaps bacterial, the absorption of which sets up the pathological conditions of

* *Greene.* Pathology and Morbid Anatomy. † Ibid.

Pyæmia and Septicæmia; and so, either by reflex action from the sensory nerves, or by direct irritation of the, at this time, greatly enlarged ganglia of the part itself, there follows a general disturbance of the vital function, such as loss of appetite, constipation, non-secretion of milk, etc. Through impaired action of the *vasa vasorum*, the walls of vessels are relaxed, the blood pours through them in increased quantities, and there follows naturally a state of congestion, evidenced by the peculiar appearance of the conjunctivæ, the distended vessels of the sclerotic, the tendency towards a low form of Pneumonia, etc.; also effusion, shown by the gradually progressing paralysis—from the knuckling of the hind fetlocks to the amaurotic eye, delirium, stupor, coma, and apoplectic death. On this hypothesis, the chief effort in treatment is to be directed to overcoming the blood poison, encouraging the contraction of the uterus, and so the expelling of its contents; and also to restoring the impaired function of the sympathetic nerves, and thus control the congestion and effusion, and equalize the circulation. For these purposes it is suggested that some antiseptic be administered internally, and in large doses, as—

R. Sodæ Sulphis ℥ii.
Aquæ Font . Oi.,

this to be given at one time and repeated every twelve hours, until the action of the bowels, etc., has become re-established. In addition to this, let the patient receive

Fl. Ext. Secale Cornutum ʒii.

every one, two, or three hours, until she is able to rise; afterwards, every six hours until the bowels are acting regularly and the secretion of milk is moderately well accomplished. The fluid extract of ergot is recommended, as its quality and uniformity are more reliable than those of the powder. It is used in the officinal United States pharmacopœia strength, which represents ounce for ounce. If at any time the patient is so deeply comatose as to be unable to swallow, ergotine may be administered hypodermically in from two to three grain doses. In addition, it is well to have the passages to, and the uterus itself, so far as may be, *sponged* carefully out with a weak solution

of sulphate of zinc or chlorine water. Appended are the outlines of two recent cases; to which others might be added, but that it is deemed unnecessary, as it would be mere repetition.

CASE No. 1.—Cow belonging to Mr. H. Called at two p.m., Nov. 8th. Disease first noticed that morning at six o'clock, when she refused to breakfast; calf thirty-six hours old. Patient down and unable to rise; slightly delirious; tossing head about at intervals; breathing hard; pulse eighty, quick and compressible. Treatment as directed: ergot every two hours. Same day, eight p.m., comatose, and in order that she might be kept lying in a proper position it was necessary to prop her; pulse more indistinct; breathing more laboured. Ninth, ten a.m., more comfortable; she is able to maintain her position; pulse seventy-two, and firmer; entirely conscious; no appetite. Tenth, ten a.m., some improvement since yesterday; making frequent attempts to rise; has micturated freely earlier; bowels not yet moved; disposed to eat a little hay; pulse sixty-five. Evening: give the ergot every three hours instead of every two hours; this afternoon she got up with a little help, and walked some fifty feet into her stable. Eleventh, ten a.m., cow gets up readily and walks well, but still prefers to lie down. Appetite good; defecated during the night; gave about two quarts of milk. Give sodæ and ergot this evening every six hours. Thirteenth, ten a.m., cow perfectly recovered and giving a good quantity of milk.

CASE No. 2.—Cow belonging to Mr. C. Called at half-past nine a.m., Nov. 15th. She was down and unable to rise when first seen in the morning; calf about twenty-four hours old; pulse eighty; breathing excited. Same day, five p.m., comatose; stertorous breathing; lying stretched out and somewhat tympanitic. Owner disgusted, and had sent after a knacker to come and take her off; at our earnest solicitation he agreed to keep her until she died. Sixteenth, ten a.m., entirely conscious, but still unable to rise; disposed, if handled much, to become slightly delirious; tympany gone. Seventeenth, ten a.m., cow up; fair appetite; gave between three and four quarts of milk; during the night the bowels had moved. She was discharged with a tonic, which was to be continued for a few days. Twen-

tieth, one p.m., cow turned out into a cold rain yesterday, and to-day "seems lame and sore across the back"; ordered

R. Tinct. Sappo. Camph. ℥vi.
Aquæ Ammonia . . . ℥iss.

to be well rubbed into the back, and she is to receive a glass of whiskey three times daily. Twenty-fourth, apparently well.

OZÆNA.

BY PROFESSOR WALLEY, PRINCIPAL OF THE VETERINARY COLLEGE, EDINBURGH.

As the above subject has been recently broached in the *Veterinary Journal*, I have thought that the relation of the two following cases—as they are illustrative of special characteristics of the disease—may not be devoid of instruction.

Briefly, allow me to observe that I think one or two of the remarks made in Mr. Broad's paper (vol. i., p. 446) are calculated to mislead, especially where he says that the absence of stench in Glanders, and its presence in Nasal Gleet, is diagnostic, differentially, of the two diseases. This is by no means the case; as the discharge of Glanders is sometimes very fœtid, particularly when the sinuses and bones are involved in the ulcerative processes, and when Nasal Gleet degenerates into Glanders. On the other hand, the discharge of Nasal Gleet is not unfrequently inodorous.

Again, Mr. Broad does not draw a sufficiently distinctive line between the characters of the attendant tumefaction in the lymphatic glands in the two affections; and it must be always kept in mind that the character of the glandular enlargement will sometimes be materially modified, by the previous application of a blister by the owner of the patient.

Ulcers of the *Schneiderian* membrane are also often present in common cold; though they are usually situated at the anterior part of the septum, are florid in colour, circular in form, and yield readily to treatment.

It would be much better if we were to do away with the term

"Gleet" (signifying, as it does, a discharge of mucus, or other secretion, from any organ) as applied to chronic nasal defluxions, and confine ourselves to that of *Ozæna*, though it is not, in every case, strictly accurate.

Ozæna, according to the location of the lesions, may be: (*a*) *Sinual—i.e.*, confined to the sinuses of the head; (*b*) *Nasal*—circumscribed in the nasal fossæ; (*c*) *Ethmo-turbinal*—involving the ethmoidal cells and the turbinated bones, more frequently the upper bones. Each of these forms may be separate or distinct, or they may, primarily or secondarily, complicate each other, as seen in Case No. 1.

CASE No. 1.—*Sinual, succeeded by, and complicated with, Ethmo-turbinal Ozæna.*

Subject: Brown van horse, — years old.—At the outset disease confined to the right antrum and right frontal sinus, the symptoms being very distinct. The animal was kept at constant work for about three months, during which time his appetite remained good and his condition firm; the internal medicines administered were *Ferri et Cupri Sulph.*, Cantharides, and Capsici, alternated with arsenic, and plenty of oil-cake, beans, etc., allowed. After a considerable amount of persuasion, the owners of the horse consented to have him trephined. I accordingly cast him, and opened the antrum of Highmore, which was literally packed with solid pus; this I broke down with my finger, and removed with cold water injected by a powerful barrel syringe, in the use of which an unexpected and well-nigh fatal accident happened. When introducing the nozzle of the syringe for the last time, the horse made a tremendous plunge, causing the nozzle to pass about three inches up the sinus, and bending it against the edge of the bone. On the withdrawal of the syringe, blood (arterial) rushed violently from the aperture, and also down the nostril; at first I did not attach much importance to the accident, but after watching the hæmorrhage for a few minutes, I saw that danger was to be apprehended, and injected *Ferri Perchlorid. Sol.* ʒij., followed in a short time by a saturated solution of *Acetum Plumbi*, without checking, in the least degree, the flow of blood; seeing which, I trephined the frontal sinus and injected the *Plumbi* solution *ad libitum*. This also failed

to effect my purpose, as did every attempt to arrest the hæmorrage by plugging the sinuses and nostril.

As the blood was finding its way into the fauces, and threatening suffocation, the horse was allowed to rise, his head kept elevated, and cold water dashed on his face and up the nostrils for ten or fifteen minutes, without avail. The head was then drawn up to a ring in the wall, and the animal left quiet, in the hope that the hæmorrhage would cease with the exhaustion of the cardiac and arterial propulsive force. This it did in the course of about fifteen minutes; but the animal was terribly reduced in strength, and did not recover from the effects of the loss of blood for three weeks. In a day or two the sinuses were washed out with warm water, and carbolic oil introduced. A few days after, the carbolic oil was superseded by creosote liniment, and this again by *Sol. Potass. Permanganate.* The discharge from the antrum diminished in quantity, and became healthy in quality; that from the frontal sinus increased in quantity, and assumed a horribly fœtid, ichorous character, flowing over the face in large quantities when the head was depressed. Fearing a recurrence of the hæmorrhage, I did not for about ten days make a minute examination of the sinuses; on doing so, however, I found that no communication existed between the frontal and other sinuses; the nasal bone had also become considerably thickened, and was tender to the touch. By the aid of a curved, thick, blunt-pointed probe, I endeavoured to establish a communication between the frontal and maxillary sinus, but failed in the attempt. I, however, observed, in using the probe, that a considerable quantity of fluid pumped up through the aperture in the frontal bone, in much the same manner as is seen when sharp pressure is applied to a sponge previously saturated with water. This fact, coupled with the fœtid discharge and the enlarged nasal bone, led me to the conclusion that caries of the superior turbinata existed.

The horse was again cast, and the nasal fossa trephined—the removal of the piece of bone being followed by the outward flow of a large quantity of ichorous pus. The portion of bone which had been removed was found on examination to be considerably thickened in its external plate by a new fibro-cartilaginous

formation. Introducing my finger into the fossa, I discovered that the turbinated bone was denuded of its membrane and very friable; consequently, I broke it down and removed it piecemeal: it was completely necrosed, and black in colour. My next care was to establish a communication between the frontal and maxillary sinuses. This was done with comparatively little difficulty. Injections of carbolic acid, and chloride and sulphate of zinc, were successively tried without any good resulting. Ultimately, a few more small portions of bone were removed, and creosote liniment injected daily, with thoroughly satisfactory results. The horse, in about six weeks after the first operation, having regained his condition, was put to light work, and is now progressing favourably: in fact, the cure is very nearly complete.

The great point of interest is the extensive hæmorrhage which accidentally resulted from the injury produced by the nozzle of the syringe; undoubtedly it proceeded from the spheno-palatine artery, which must have been three or four times its natural size as the result of irritation.

CASE No. 2.—*Nasal Ozæna.*

Subject: A roan cob carriage gelding, five years old.—On the 5th of October I was asked to proceed a distance of some sixty miles north to examine the above animal, the report being that he was suffering from Glanders. On my arrival, I found that the case had been diagnosed at the outset by a blacksmith as one of common cold, for which he had treated it about a fortnight; when, as the discharge from the nose did not cease, he came to the conclusion that it had degenerated into Glanders.

On examination I found a well-marked case of right nasal Ozæna, with some suspicion of turbinal mischief. The whole of the superior part of the nasal bone was enlarged, bulged, painful on pressure, and the skin was hot. The tenderness extended to the region of the antrum, which yielded, on percussion, but slight resonance; the angular vein was distended, and the corresponding conjunctiva injected, with defluxion of tears. The horse was reduced in condition; his coat was unthrifty, appetite voracious; there was no cough; but the discharge from the nose was very fœtid; there was characteristic unilateral glandular enlargement.

Diagnosis.—Caries of the nasal bone, ulceration of the Schneiderian membrane covering it, and inflammation of the superior turbinated bone.

Treatment.—Constitutional: liberal allowance of nutritious food, especially beans; moderate exercise; good grooming; administration of *Cupri et Ferri Sulph.* and *Gentian omne mane* in corn, and *Soda Phosph.* ℥. p. o. n. dissolved in water and poured on mash. *Local:* application of *Ungt. Hyd. Iod.* over seat of injury, inhalation of medicated steam twice daily, and injection of *Sol. Potass. Permang.*, once daily.

October 28th.—Found my patient much improved; cessation of nasal catarrh; entire subsidence of glandular swelling, and of vascular engorgement; restoration of resonance to antrum, with hyper-resonance of nasal enlargement, as the result of dilatation of the fossa; arrestation of the lachrymal defluxion; Schneiderian membrane healthy; breath sweet; tenderness and heat of the skin has passed away: the condition of the animal altogether much improved.

Suspended all treatment, with the exception of applying a little more *Ungt. Hyd. Iod.* over nasal bone; ordered the horse to be clipped and put to work.

NATIVE CAVALRY IN INDIA, AND VETERINARY SURGEONS.

BY R. POYSER, M.R.C.V.S., ROYAL ARTILLERY (LATE "HIPPO-CHIRURGUS").

SOME time ago, a correspondent to the *Pioneer* of India remarked, that "if there existed a necessity for a veterinary surgeon in a battery of one hundred and ten horses, surely there was a greater necessity for them in native cavalry regiments." With this opinion we entirely concur, knowing that each corps has four hundred or more horses, exclusive of chargers. Hitherto, the "powers that be" have not been in the same way of thinking, or have not considered it worth their while to reduce the suggestion to practice. Perhaps they argue that these horses are not entirely their property, and being more closely related to the

country by inheritance than their own expensive and well-cared-for stud-breds, are less liable to the ills the latter suffer from, and claim an immunity from diseases which does not belong to the coarse-bred and delicately constituted—that is, for existence in a tropical climate—Australian horses ; and that, for these reasons, there is no need of their being under veterinary care.

But if these neglected animals are not the intrinsic property of the Indian Government, they accomplish a vast amount of the labour, military and otherwise, that it could ill afford to impose upon the horses of the Royal Service. A recruit on joining a native cavalry regiment must either bring with him a horse suitable in all respects for a trooper, or pay twenty pounds to the regimental fund for the purchase of one ; and were it not for a "chunder" fund which these regiments keep up by monthly subscriptions from the pay of each man, the poor recruit might suffer considerably by the death of his horse : simply because no scientific hand was near to render medical aid or surgical relief. The fact that native cavalry horses are in the employ of the State is not to be overlooked, precisely as are the chargers of officers of all corps which Government does not assist to purchase; and being such, they ought to be provided with professional assistance from some source. Were these horses to cost Government as much as those bred in its studs, or bought in the Calcutta, Bombay, and Madras markets, before they are actually fit for the service, we think that the suggestions which have, from time to time, been strongly set forth by the press, would most certainly be carried into effect.

Alas ! here is but another example of the "penny wise and pound foolish" principle, and a sad misconception on the "score of humanity." Each regiment should be provided with a veterinary surgeon, who, it may be hinted, up to a certain rank, should be selected from the old "local list," until the remnant of that body becomes absorbed. Then we would indent on those who have elected to serve in India from the Queen's Service, and denominated by the *Army and Navy Gazette* the "Imperial Department," which at present consists of twelve veterinary medical officers, who believe they were sent to the east for the express purpose of serving with the regiments in question.

Whence they received this erroneous impression we know not; but they soon discovered that they were not required in that quarter; or it might have been, as it has continued to be, that their services were more urgently wanted in single batteries. These officers not unreasonably complain of their anomalous position; for really they belong to no corps, and as there is no departmental uniform, they must either appear as civilians, or don the "war paint" they have no right to; and this always happens to be that of the Royal Artillery, which every veterinary surgeon on probation is expected to array himself in—at great and needless expense—as soon as he joins the army. Excepting on medical certificate, they see no hopes of returning to England ere their twenty-five years of service are completed; and being subject to the authority of a local Principal, and presumably for duty with local troops only, they seem and feel, to some extent, alienated from the true head of the Department in England.

But the resources of the Local and Imperial Veterinary Departments would fail to supply the number of officers required, and it would therefore be wise of Government to frame special conditions for a special service, and then call for volunteers; at first giving preference to those best acquainted with the country and its customs, and the requirements of the branch opened to them; and afterwards permitting the home authorities, on local representation, to appoint as might seem desirable. It is needless to enumerate the duties of a veterinary surgeon in charge of one hundred and ten or twenty horses; but we may glance at those which would devolve upon him in a native corps.

He would attend fairs and horse auctions, and make periodical tours through the several horse-breeding districts for the purpose of examining and selecting suitable troopers for purchase. This in itself would be an onerous duty, but one in which his services would be eminently valuable; for he would, in time, raise the standard of the trooper, and render his regiment more efficient, —avoiding those horses which a less practised eye, and a less sensitive manipulation would permit to be passed in. He would keep a watchful surveillance over the young stock; for, be it remembered, the native cavalry can afford to purchase its

remounts at an early age, and keep them until they become serviceable. He would castrate the colts, or supervise the operation and the after-treatment, and see that a better and more uniform system of shoeing was carried on.

He would thus materially increase the endurance and travelling powers of his charge, and of course add to its comfort and appearance. In this branch there is much room for improvement that cannot be accomplished except under professional direction.

But whilst we are preaching about horse-shoeing by the uninstructed natives of Hindostan, we cannot pass on without observing that its practice, which has recently come under our notice in a moiety of our army at home, is not only disgraceful to the present age, but thoroughly discreditable to that professional surveillance which has the direct instruction of our farriers in hand—though it may be not at heart. The shoeing in native regiments is generally done "cold,"—that is, the shoes are fitted without the aid of heat; and this, though more of a necessity than a fault, could be vastly improved by the veterinary surgeon. The buttress is not everywhere discarded, and hoof mutilation is still the reprehensible fashion.

Setting aside some of the above duties which the veterinary surgeon of a British corps is seldom called upon to perform, his services would be invaluable in native cavalry stables, which are nothing more than double rows of horses picketted in the open, hemmed in at the sides, and often at one or both ends, by the houses of the cavalrymen. This may be a politic arrangement, but it is certainly not a sanitary one. It would be immeasurably better if these animals could be sheltered *overhead*, and a free current of air allowed through the horse lines, by removal of the said habitations to a distance, or building them on a detached or widely semi-detached principle. The veterinary surgeon's suggestions on veterinary sanitation, and sanitation in general, are too frequently lost sight of, or not attended to, where horses are picketted in the open; and his directions on the principles of stable management and economy would not fail to produce a marked impression and lasting benefit.

Opportunities for arresting and averting diseases, whether induced by local or general causes, would not be so much over-

looked or ignored as they have hitherto been; and horses affected with Glanders would be satisfactorily disposed of before they had lived as long as we have known them, as centres for the dissemination of infection or contagion. The most virulent case of Glanders we ever saw was in a native cavalry regiment; indeed, the spectacle the poor creature presented at the hottest part of a tropical summer's day was horrifying, and disgusted the officers assembled to recommend his destruction. It was not until he was at death's door, standing under a tree almost asphyxiated from the severity of the affection throughout the respiratory organs, bespattering the ground at every expiration with a nasal discharge, that a veterinary surgeon—and there were two in the station—was called in, whose signature to the horse's death-warrant enabled the corps to recover a portion of its value from Government. No compensation is granted by the State when horses of native corps die from ordinary causes.

Amongst the horses of the same regiment a fatal epizoötic of a peculiar character broke out; it was considered by the medical officer to be very nearly allied to Cholera, and he recorded the outbreak as simulating that epidemic. Veterinary medical aid was, in this case, sought for, and the advice given was acted upon with beneficial results. It is of a typhoid nature, and runs a rapid course where fatal; and where not so, the progress to convalescence is tardy.

Were there veterinary surgeons in these regiments, the horses would be spared much of the unnecessary torture they receive at the hands of the unskilful *salootrie* (native veterinarian), and would escape the experiments and misdirected, though well-intended, attempts at the healing art by aspiring amateurs.

Officers' chargers, too, would get the benefit of the aid they deserve; for they are very valuable horses, and nothing inferior to those of British corps. A short time ago we were called in to attend a valuable Australian charger suffering from acute Laminitis, the sequel of superpurgation induced by an overdose of aloes given by the *salootrie*. The horse "died,"—which, being interpreted, was killed.

Even with these few authentic instances in view, it must be evident to any one that reform is necessary. Some veterinary

surgeons, having seen the helpless condition of these regiments, have tendered their services; but commanding officers show some consideration in not imposing upon a generous offer, when they well know that their regiments cannot afford to remunerate such services, which, to be of lasting advantage, must be contantly rendered.

Now, to obviate any delicacy which would prevent their being summoned, a Commandant has been known to offer as much as he could afford out of the regimental fund, or out of his own pocket; but when once their services are *claimed* by payment, the allowance becomes inadequate to the amount of labour demanded. Thus, volunteering is a proceeding as unsatisfactory, on the one side, as compensation on a private footing is on the other. Nor do we think that "head-money" at the rate of two annas (threepence) per horse, per month, would be a sufficient remuneration, unless the veterinary surgeon had charge of a battery of one hundred and ten horses only, and lived within easy reach of the cavalry. Regiments, it may be noted, are separated from one another in some Indian stations by two miles; so that an additional horse would be required for this extra duty. There are numerous stations where the last-named arrangement could be, without much objection, carried out: viz., at Mooltan, Sealkote, Ferozepore, Jullundhur, Agra, Cawnpore, Bareilly, Fyzabad, Seetapore, Dinapore, Benares, Allahabad, Nowgong, and others in Bombay and Madras. A veterinary surgeon in charge of a European cavalry regiment, or two batteries of artillery, has quite enough to engross his attention, and should not be hampered with an extra charge. Besides, it is difficult to serve and please many masters.

A man may love his profession for its own sake, but he is certain to like it better provided he is adequately remunerated for extra responsibility.

An army veterinary surgeon has had the medical charge of over eleven hundred horses, and all he could claim from Government was a paltry fifty-five rupees *per mensem* for doing the duty of three officers. Against this dull picture, it is refreshing to recall those good old times when our allowances increased our pay by £10 a month. Alas! this £120 per annum passed into

other channels when G. O. No. 338 of 1871—Simla—came into operation.

Government, however, loses by the transaction—though it may not know it, as well as the veterinary surgeon.

This, and several other legacies to be found in the Indian "Code of Veterinary Rules," bearing the above date, can be traced to the paternal recommendation of the late Principal of the Veterinary Department in Bengal. He saw they were for our good, perhaps, and it may seem ungrateful to complain.

Doubtless, there would be found many veterinary surgeons eager enough to serve with native cavalry, provided they reaped the Indian Staff Corps Service advantages, which extend to pay, and to the rules of furlough, pension, and retirement. For many years past the employment of veterinary medical officers has been advocated, and is much desired by commandants in their regiments; and more than once has the matter been brought prominently under notice. The commandant of a Punjaub cavalry corps was so impressed with the importance of veterinary assistance in selecting his remounts, that he has paid our travelling expenses for more than two hundred miles, and allowed us so much per horse passed sound or fit for service. The regimental fund was, of course, taxed, but the system paid ultimately. If the State would only assist these corps in the way we have attempted to point out, we venture to assert that no branch of the Indian army would be better mounted at double, or even treble, the price; unless the fairs become monopolised by special remount committees appointed to purchase horses for the European corps, at a rate that native corps cannot reach. However, from what we have observed, the native cavalry is likely to hold its own, for it has a way of mounting itself that cannot be accomplished by the present constitution of those committees we have referred to. And though the market price of horses is tending upwards, from numerous causes we need not here mention, it is the current opinion that the native regiments pick up a class of horse of by no means an inferior stamp, and at a price far below its real value; and as this class is now rising in estimation, it naturally follows that a higher rate must be paid, for decent remounts at £20 per head can no longer be found. As the money value

of horses increases, so does the necessity for affording them professional aid when they need it. The nineteen Bengal and five Punjaub cavalry regiments, and the corps of Guides (to say nothing of mountain batteries, Central India horse, Hydrabad contingent, Bombay and Madras regiments) aggregate no fewer than ten thousand horses, representing a sum certainly not less than £300,000; and yet, save and except a flying inspection by a staff veterinary surgeon once a year, or once in two years, these hard-worked and serviceable creatures are medically and surgically not cared for, excepting by amateurs.

This service, too, would open up a field of occupation for many well-educated and clever veterinarians, who scarcely know where to turn for a livelihood when they have secured their diploma.

If purchase committees cannot be trusted to mount our Royal troops, unassisted by the Veterinary Department, is it feasible that the whole of the native cavalry of India should be mounted without a reference to veterinary opinion? Certainly not; indeed, no trooper should be admitted into any service without the advice of a veterinary surgeon.

Native cavalry horses may, as before remarked, possess a greater immunity from the maladies that attack our stud-breds and Australians, owing to their close relationship to India, by inheritance; but, if this be true, it is no reason why entire regiments should be left to the tender mercies of uninstructed *salootries*, or to the regimental amateur veterinarian, even though he be armed with the "Illustrated Horse-Doctor," or the "Veterinary Aide Memoire" (by a local amateur). We confess to having been lengthy, and occasionally digressive; nevertheless, let us trust some good will arise out of our endeavour to expose a state of things which ought not to have existed so long.

POISONING BY TOBACCO INFUSION.

BY SEPTIMUS LAMBERT, M.R.C.V.S., STRETFORD.

THE following case, copied from my note-book, may be of interest:—

On the 28th of September, 1872, a two-year-old shorthorn bull

of mine, in good condition, but affected with Mange on both sides, was dressed by my shepherd with tobacco-water obtained from a tobacco manufactory. In fifteen minutes after the application, the man came to say that the bull was dying.

I found the animal shivering very much, with the eyes retracted and pupils very much contracted—in fact, almost invisible. On my attempting to make him walk, he staggered a great deal, and fell down in a state of stupor or intoxication. The pulse was very slow, and almost imperceptible.

I immediately had him washed with soft soap and warm water, and dashed cold water over him; also gave of Spirits Æth. Nit. ℥iij., had him well rubbed with straw all over his body until he was dry; and in twenty minutes after giving the medicine, the symptoms of intoxication not appearing to diminish, I repeated the dose. In fifteen minutes after this he was quite well and feeding.

The peculiar features of this case were the great contraction of the iris, retraction of the eye, and the total absence of any muscular spasm.

Immediately after recovery he passed a quantity of urine, and ever afterwards did well.

The total surface rubbed with tobacco-water was two square feet.

The tobacco-water had been frequently used by my shepherd for dressing sheep affected with Scab, but never with any bad effects.

VETERINARY OBSTETRICY.

BY W. A. COX, M.R.C.V.S., ASHBOURNE.

(*Continued from page* 268, vol. i.)

THE last communication concluded with the causes of ***Premature labour.***

In these cases, if the fœtal membranes, known as the *water*, or *calf bladder*, be presented externally, or have been ruptured without such presentation, and although the vulva is 'close,' the

sacro-ischiatic ligaments tense, and the calibre of the vagina small, exploration should be made with the index fingers; but unless there is sufficient capacity, the hand and arm should not at once be introduced, nor should immediate delivery be attempted.

Unless *natural* progress is made—and the history of the case will be a guide on this point—a piece of wood, pestle-shaped, and the thick end covered with an ointment made of the extract of belladonna (one part to four of lard, well blended and mixed) should be introduced into the vagina, and, by several rotatory movements, the surrounding parts dressed.

Relays of rugs dipped in hot water should be applied from the haunch to the tail.

Parturient agents, *i.e.*, the ergot of rye, or those stimulating the uterus, are unnecessary, as the pains are often more than sufficiently violent; rather employ such as will relax muscular tension, —such as extract of belladonna combined with Spts. of Æth. Nit., in repeated doses.

Some stock-owners, and those least conversant with these cases, think that if the animal evinces pain, the fœtus must, "willy nilly," be removed at once. They do not consider whether the animal is prepared or not; and in some of these cases there would be as great a probability of success in attempting to draw an elephant through the keyhole of a door, as to successfully take away the young. This urgency is aggravated by the "busybodies," who, if the case occurs in a village, invariably assemble.

If other professional duties compel the veterinary attendant to absent himself for some time, he will find that, on his return, some of the "good hands" have been trying their skill, and his expostulations will be met with insult or indifference. I had on several occasions, years ago, experience of this; but a lesson was given to them that they would not easily forget, and subsequent experience taught me to adopt this essential precaution: *I had the animal locked up until my return, and made one man responsible for its safe custody.*

In a few hours, with the treatment previously recommended, there is a great change; the ligaments are relaxed, and this is called "gone in the bone," "down in the bone," "off at the hip,"

"down in the hips,"—these are local terms for this relaxation; the vulva, too, is enlarged, and the arm can be introduced with safety.

It was suggested by Professor Varnell, in a lecture delivered at the Royal Veterinary College, that where the pelvic opening was small, and the fœtus so large as to render its birth impossible, a division of the sacro-ischiatic ligament might be attempted; but he threw this out as a *dernier ressort*, when other obstetric measures had failed.

In the *Veterinarian* for 1857, p. 20, Mr. F. J. B. Jones records his success in this operation. I will quote in his own words. Having a trocar with him, he says, "I introduced it between the ischio-rectal fascia and the sacro-ischiatic ligament, and then withdrew it, thus forming an opening into which I passed a probe-pointed bistoury, and, having my other hand on the outside, I commenced dividing the ligament until I had quite severed it, which I could easily ascertain by feeling the point of the bistoury under the skin." The calf was easily extracted. The cow recovered.

On reading the article, it will be found that the fore-legs presented externally, the head turned to the side. Although he "corded" them, I fail to see or understand that, prior to traction, the head was placed straight, or the feet returned, and the head brought into its proper position with regard to them. Although no ill effects resulted from the division of the ligaments, it must have been a matter of gratulation that the cervix uteri was uninjured. There are folds, too, of the neck of the uterus that are caused by the expulsive efforts; and when the fœtus is mal-placed, or it is forced against the postero-inferior part of the uterus, an apparent ledge is felt, and unless the fœtus is pushed back, in raising the head this is liable to injury.

In the case quoted, I should have pushed back the feet partway up the vagina, corded the head, and, whilst traction was employed, worked my hand round the nose and brought the head straight, using sufficient force to straighten the neck. Had this been impossible, from the constriction of the vagina, or any fear that the size of the fœtus would not allow of extraction *entire*, I should at once have removed the extremities. The

modus operandi in such a case will appear in due course. Although I have attended some thousands of cases, I have never had occasion to operate in the manner suggested by Professor Varnell.

I have always found that the greatest difficulty, and danger too, is in getting the fœtus, feet and head, or rather from the sternum to the shoulders, into the vagina, and quite through the cervix.

In the bitch, constriction of the vagina can be overcome by the use of the hot bath, at the temperature of 112° to 114°. The animal should not be kept in it many minutes, but removed as soon as the breathing becomes quickened or the tongue protruded. It should then be rubbed dry before a fire, and all precautions taken against cold.

"*Abortion*," "*Shirking*," "*Casting*," or "*Pitching*," is the premature birth of the fœtus, preparation having gradually been made previous to determinate pains.

The fœtus may or may not be alive; but it is usually dead, and frequently decomposed to a variable degree.

Abortion may occur at any period of conception, but most frequently at the fifth and seventh months; at the former the fœtus is invariably dead and decomposed; at the latter it is occasionally alive.

Causes.—From the frequency of its occurrence, and the loss entailed upon dairymen and stock-breeders, this subject is worthy of separate and special consideration; but in justice to the remainder of my subject, I shall be as concise as possible.

In some instances abortion has assumed an almost enzoötic form. This is traceable to defective hygiene: improper food, irregularity in feeding, damp humid sheds in contiguity to cesspools or dungheaps, noisome stenches, and improper ventilation. It occurs more commonly after seasons of excessive and rapid vegetable decomposition. Many animals are fed with chaff (cut hay or straw), and corn or brewers' grains. When heavily fed, portions accumulate and become sour and mouldy, and have an injurious tendency. If it occurs with frequency on a particular farm or locality, some attribute it to the herbage, but often without positive evidence on the matter.

Many cattle are gross feeders, and during the period of gestation are fed with inferior fodder, the best being retained until the animal has calved. The capacity for food is great; indigestion imperceptibly sets in; little notice is taken, unless the animal shows very evident symptoms of illness. If she grunts and breathes heavily, it is explained, "Oh, she may well do so: look how heavy she is in calf!" and this is, often enough, when a good portion of the extra size is due to the accumulation of food in the stomachs.

Common-sense treatment—*i.e.*, care in feeding, and having dry, well-ventilated sheds—is the best preventive of abortion.

A case having occurred in a shed common to a number of cows, this case should be removed at once, as pregnant animals are most sensitive; and the "standing," or stall, should be cleansed and disinfected.

Certainly there are cases in which external violence has killed the fœtus, or in which nervous excitement, or acute chronic disease, wounds, injuries, and lameness—if acute, especially in the feet—seem to have had a peculiar action upon pregnant animals.

In several dairies, in animals impregnated previous to, at, or immediately after, attacks of Foot-and-mouth disease, as many as 50 to 80 per cent. have aborted at various intervals after conception.

In mares, violent exertion is the most frequent cause, especially "shafting"; though any of the causes before mentioned would induce it. Savin, too, is said to produce it.

In sheep and other animals, inclement weather, exposure, and sudden changes of diet, will induce abortion; and in the first-mentioned creature, *fright* is an especial cause. The presence of a dog amongst a flock not accustomed to such an animal will occasion numerous accidents of this kind.

In cases of abortion, all measures occasionally fail to induce sufficient relaxation of parts for the fœtus to enter the vagina. In such instances, it is malpractice to endeavour to get it forward by force; such a plan has prevented the subsidence of pains, and the recovery of the animal, by the gradual sloughing away of the fœtus.

Prognosis must be guided by the condition of the fœtus; if it is in an advanced state of decomposition, evidenced by the hoofs and hair being easily removed, and by the odour; and if the parent is strong and in tolerable condition, it is favourable. If, on the other hand, the fœtus is alive, or only just dead, the passage abraded by continuous efforts at extraction, or the extremities or any portion of the fœtus have been drawn through the cervix, it is unfavourable.

A strong preparation of belladonna and oil will subdue the irritability of the parts, and sedatives and agents to reduce muscular contraction should be administered, varied with antiseptic and laxative medicine.

(*To be continued.*)

HEART DISEASE AND HYDROPS PERICARDII IN A COW CAUSED BY THE PRESENCE OF A STOCKING NEEDLE.

BY J. W. HILL, M.R.C.V.S., WOLVERHAMPTON.

In recording this, the fourth case of Heart Disease in a comparatively short space of time, I am aware there is not attached to it that interest which I believe there to have been in my preceding ones. For it is well known that cattle are peculiarly prone to devour strange substances, and that "post-mortems" and butchering frequently reveal what I found in this case. But so little has been written on the subject of Heart Disease in the lower animals, that I feel constrained, if only to induce others to add their mite to your pathological contributions, to trespass on your space once more.

On the 18th October I was requested to visit a new milched cow, belonging to A. C. Twentyman, Esq., of Castlecroft. I found her breathing short, eyes unusually bright, pulse quick, temperature 105°, milk nearly gone, and no appetite. I was informed by the bailiff that she had appeared well until the day but one previously, and he thought she must have taken cold during one of the bleak nights she was out. There was, how-

ever, no grunting or cough; the breathing, which I have stated was short, was to appearance much the same as one observes in a "broken-winded" horse—a jerking double movement at the flank. On auscultation, congestion of both lungs—particularly the left—was manifest. I ordered mustard to be applied to the sides, and sent a diffusible stimulant, to be given in gruel morning and night. She continued in the same state until the 25th, when diarrhœa set in, and I observed the slightest perceptible grunt; her pulse had now reached 96, and the temperature was still high. From her disinclination to move, the absence of any cough, the grunt, and the peculiarity in the breathing which I have observed before in such cases, I suggested the probability of a needle or some other foreign body having been swallowed. The bailiff then told me that in three fat beasts they had slaughtered, a short time since, they had in one found a piece of wire bent up in the paunch, and in the other two some long spike nails, etc. With this statement my conviction that I had diagnosed correctly was strengthened.

The diarrhœa, loss of appetite, and wasting continued; gruel was administered, and tonics and astringents were had recourse to, but all alike in vain; and on the 28th I found her lying on her broadside (the right) in great agony, breathing in short gasps, alternated with a grunt. In an hour and a half death terminated her sufferings.

On opening the chest, I found the lungs, pericardium, and diaphragm adherent; the pericardium was immensely thickened, nearly black in colour, and contained at least half a gallon of fluid. The heart was bleached, and presented a peculiar wrinkled appearance, due, I opine, to its submergence for a length of time in such a quantity of fluid; its weight, with pericardium, was seventeen pounds. On examination towards the apex on the left side, we discerned what appeared to be a small ragged hole. On attempting to insert the little finger, it came in contact with a sharp substance. This was then immediately felt for, and withdrawn, and proved to be a stocking needle, three inches long, with a broken eye. On opening the heart, I found the needle had passed through the opposite wall into the right ventricle, and again into its outer wall, skewering it through, as it were; and

from the cartilaginous nature of its channel, and the encrusted condition of the metal, it had evidently been there some months. On examining the stomach (*rumen*), the place where the needle had passed through was plainly visible, as it was also in the diaphragm and pericardium; the former had healed and become thickened at that place, but the two latter were still inflamed. The lungs were congested, sympathetically. One usual feature in these cases was absent—viz., an intermittent pulse; and this, I think, the position of the needle will account for: had it entered higher up, a different effect must have been produced, as well as a speedier termination.

SPLENIC APOPLEXY.

BY J. B. MARTIN, M.R.C.V.S., ROCHESTER.

I HAVE seen, from time to time, cases of outbreaks of that fatal disease, Splenic Apoplexy, recorded as occurring in different counties; but I have not observed any from this county, Kent. I am aware that there is not any important difference in the cases witnessed here to those already published; but it is both essential and necessary that we should accumulate as many facts as we can with regard to this fatal blood affection, occurring, as it does, under a variety of circumstances. Veterinary surgeons of extensive experience, in different parts of the country, can furnish the facts which will enable the scientific pathologist and microscopist to assist us in understanding the true nature and cause of the disease.

In April last, Messrs. Wakeley Bros., Rainham, had eight heifers fattening in a yard, one of which died very suddenly one morning. The yardman said they were all right the previous evening. A week afterwards another died, just as suddenly; when my attendance was requested to ascertain the cause. In the yard I saw a large quantity of blood that had issued from the rectum of the one that died. There was another heifer in the yard from whose anus blood was oozing; and the only other symptoms exhibited were a drowsy dulness of countenance

and bloodshot eyes. As the animals were nearly fat, I recommended that they should be slaughtered for the butcher, they being worth a good sum, and the adoption of curative or preventive treatment offering but little prospect of success.

It is difficult to account for the origin of this outbreak. The animals had been fed on a highly nutritious diet—in fact, been forced for the butcher: the food consisted of cut fodder, linseed-cake, and hay; and wheat being cheap this year, they had a large quantity of flour mixed with their fodder. No doubt, in these free trade times, farmers have had to look close to their interests in competing with the foreigner, like some other sections of the community; and considering the great demand for, and the exalted price of, meat and manure, they have been compelled to feed their cattle high and highly cultivate their land, in order to bring their crops and cattle to early maturity, and thus make their business lucrative. This forcing system, I think, may contribute in a great degree to the production of these blood diseases. In this instance the water came from a well, and seemed pure; it was not near any cesspool from which any organic matter could percolate to it through the soil. The water, in fact, had been drunk by horses and cattle for years. But it is a curious coincidence that about the same time, indeed for about a whole year, on this farm and a contiguous one belonging to the same owners, several valuable horses have either died before I could see them, or very soon after my arrival. They exhibited symptoms of Enteritis, with abdominal pain, cold perspiration, haggard expression of countenance, glassy eyes, and laborious breathing; but instead of a wiry pulse, as in Enteritis, and which indicates a tolerance of blood-letting, the pulse was weak, and the animal staggered and rolled about as it walked.

I have adopted every kind of treatment for these horses, but without success; and I have now come to the conclusion that it is a species of Anthrax, or blood-poisoning, they have died from; as the *post-mortem* examination has revealed similar appearances to those discovered in the bullocks. Both of these farms are in close proximity to the river Medway and the low marshes adjoining it; and as a humid marshy locality like this favours decomposition, one would be led to suppose that the cause was

miasmatic. But, on the other hand, I had another outbreak of Splenic Apoplexy occurring on an inland farm, on a hill, high and dry, belonging to Mr. Ballard, Frindsbury. This gentleman, in September 1874, purchased four heifers, each eighteen months old, and very poor in condition. He placed them in a farm-yard, and fed them on wurzel, pea-straw, and cut fodder. One of the animals being smaller, weaker, and poorer than the others, he placed it in another yard, about half a mile away, in order to feed it better. All improved rapidly in condition; but in April last one of the three was taken ill, when an unqualified practitioner was sent for, who said there was nothing much the matter with the beast, and that it would soon recover; but in a few hours it died. I was sent for, as Inspector of the District, to make a *post-mortem* examination and examine the others. The following day another died, and the day after I saw the last of the three. It was extremely lively, and in an excited state; in fact, it was very wild; the eyes were staring, and the visible mucous membranes were high-coloured, but the breathing was not disturbed. I at once returned home and sent some antiseptic medicine, but before it arrived the heifer died. Strange to say, the weakest one, that which was fed best and improved most, is still alive. This fact, also the one outbreak occurring in a wet marshy region and the other in a dry hilly district, makes it the more perplexing and difficult to account for the real cause of this disease. There is one farm in a very high state of cultivation and the other not; then on the farm near the marshes, if by evaporation the germs of the disease could be conveyed through the medium of the atmosphere, the same cannot be said of the inland farm. Whether this disease, Anthrax, is due to the presence of infusoria—Bacteria—in the blood, or the parasite is the result of the disease, or whether fermentative action is set up from luxurious feeding, or in what way the blood receives its poison, we must leave for the scientific pathologist to decide; but certain it is that the disease is not clearly understood at present. I made a *post-mortem* examination of all the cases, and found pretty much the same appearances in every animal. On opening the abdominal cavity, the peritoneal covering presented a dark-red colour; the animals were evidently attacked suddenly,

as the rumen was quite full of *ingesta;* the whole of the mesenteric glands were of a very dark-red hue; the mucous membrane lining the rumen, reticulum, and omasum was reddened; but the fourth compartment of the stomach exhibited the most marked lesions of the disease. The lining membrane of this part was in a highly inflamed condition, being of a deep purple tint, and presenting a similar appearance to that of Cattle-plague. All through the course of the intestines there was extravasated blood, and the liver was much increased in size, and black; when cut into, blood, the colour and consistency of treacle, flowed from it. The same may be said of the spleen, but this viscus was three times its normal size. The chest and its contents exhibited the same deep-red appearance; the pleura and internal parenchymatous structure of the lungs were highly congested; the auricles and ventricles of the heart bore the same deep-red hue. If a diseased bullock is killed and dressed for the butcher, the flesh and fat, when cold, present this deep-red colour.

It is now generally admitted that the flesh is unfit for human food; at the time I first saw cases of Anthrax, I was undecided on this point.

A CONTRIBUTION TOWARDS THE ELUCIDATION OF THE ETIOLOGY OF RABIES CANINA.

THE important question as to whether certain contagious diseases of animals are ever spontaneously developed has been more particularly limited to three or four affections, the etiology of which is sufficiently obscure to offer support to the arguments and counter-arguments of the "spontaneists" and "non-spontaneists." That some transmissible maladies can be *generated*, if we may use the term, without the aid or presence of a previously existing "contagium," or viruliferous agent, we can scarcely find reason to doubt. We may, for instance, adduce the Catarrhal Fever of the dog vulgarly known as "Distemper," the Pyogenic Fever of the horse called "Strangles," the "Anthrax" of nearly every creature, "Tuberculosis," and perhaps "Glanders," as diseases so developed. On the other hand, there are very serious scourges

whose origin, in this country at least, cannot be ascribed to spontaneous development. As examples of these, we may give the specific fever known as "Cattle-plague," the Foot-and-mouth disease, the specific "Pleuro-pneumonia" of bovines, and "Sheep-pox."

Of the contagious diseases whose origin is more or less debatable, perhaps none stands in more prominent relief than the terribly fatal and widely transmissible sickness which we have insisted upon designating uniquely as "Rabies"—"Hydrophobia" in mankind, if physicians so will it.

The arguments for and against the spontaneous origin of this terrifying scourge we have somewhat lengthily considered in the monograph specially devoted to it;* and we will not refer to them here. Suffice it to say that these arguments, based upon facts, experiments, and observations, left ourselves, and others more competent to judge, and far more skilled in comparative pathology, who have since studied them, in grave doubts. One of the strongest arguments, perhaps, which we brought forward was that in connection with the geographical distribution of the disease; wherein we showed that certain parts of the world—Australia, New Zealand, South and West Africa, Madeira, etc.—were exempted from it; though the canine species in these regions was plentiful enough. We also endeavoured to combat the startling and alarming supposition, entertained for a long time, that the bite of a healthy dog could have a lyssogenous effect, by a reference to the same regions; as in these people and animals must have been, and must be, frequently wounded by the teeth of dogs—in Australia by wild and domesticated dogs. Since our monograph was published, we have ventured to allay the alarm and harassing suspicion excited by three or four recently recorded cases in this country, of human beings who succumbed to Hydrophobia, after being wounded by dogs who did not exhibit any indications of Rabies, and continued in apparent good health. These cases were published in the *Lancet* and other medical papers.

Quite lately, however, our notions in this respect—never very firmly based, notwithstanding our anxiety to allay serious ap-

* "Rabies and Hydrophobia." London, 1872.

prehensions—have suffered a considerable modification; and the circumstances which have modified them are so striking, and apparently so conclusive, that we almost feel inclined to assert, notwithstanding the exceptional evidence furnished by Australia and other happily exempt countries, that Rabies may be developed by the bite of a healthy dog. Alarming and serious though the statement may be, yet in the cause of truth and humanity, and in the furtherance of pathological knowledge, we feel that it is our duty to record facts which are undeniable; and which, it may be assumed, are not overstated, when we declare that they are totally opposed to conclusions which we had previously all but accepted as justifiable, because, we thought, absolutely correct. The study of the disease, from its great importance in many respects, we have made a speciality, and everything connected with it is familiar to us. Our experience in it has been somewhat extensive, and we therefore claim to write with a full knowledge of what has been already made known with regard to it, and to a certain amount of competency in investigating its origin, and distinguishing its presence, when it is brought under our immediate notice.

Since our location at Chatham, several years ago, no case of Rabies has occurred for miles around, and the veterinary surgeon in the adjoining city—at Rochester—who had been practising there a long time before our arrival, had not seen a "mad" dog or other rabid creature until November, 1875.

Towards the beginning of October, a black retriever dog about three years old was "worried" in New Brompton, a suburb of Chatham, by a large dog belonging to a public-house keeper. The retriever had never been away from Chatham or Rochester, and was usually kept on the chain, except when allowed exercise, and then he was taken out by his owner, a druggist in Rochester, or some one else. The animal was usually affectionate and playful. On October 26th he did not appear to eat so heartily, and in fact did not care for food unless fed from the hand. On November 2nd the owner thought the dog was suffering from Constipation, as he appeared to be worse, and sent him out for exercise; neither on that day nor the succeeding did the bowels act. On the 4th he was observed to lick his paws; this was

customary when he was unwell, and generally terminated in vomition, though it did not on this occasion. He was no better on the 5th. The heart beat irregularly, and the ocular conjunctivæ appeared red. He was very quiet, could not bear to be out of his master's sight, and was pleased with any attention. Still thinking constipation was the cause, a pill composed as follows was given—

Calomel .	. gr. vi.
Pil. Colchiæ	. gr. x.

When out for exercise it was observed that attempts at micturition were not successful, nor did the bowels act. He followed leisurely and rather apathetically, and when in a field he rolled several times, and manifested an urgent desire to rub his hindquarters on the ground. During the night he slept in his master's room, where he continued to lick himself very much; but as he had got very wet when out for exercise, this did not excite much surprise. Every time the owner awoke the animal was either engaged in licking himself, or moving restlessly about. On the 6th he went out several times for exercise, but appeared to be lazy. The bowels were not observed to act, and the dog ate much grass. In the evening the owner's brother-in-law visited him, accompanied by a small dog about seven years old. The retriever attacked this dog on three occasions—an extraordinary circumstance, as they were usually good friends. On the same day, the retriever was either attacked by, or attacked, two dogs in the street. On the morning of the 7th, when out for a walk, the animal went astray, and did not return until the forenoon of the following day, when a flow of saliva was noticed; the lower jaw also "dropped," and the creature was unable to swallow unless the food was put far back into his mouth. He lapped plenty of water, but did not appear to swallow his usual quantity. As the saliva flowed rather freely, the owner did not like him in the house, so chained him up in the back-yard; but he bit his chain through, and ran into the house again at the first opportunity. Mr. Martin, M.R.C.V.S., Rochester, was sent for to see him, but that gentleman was not at home. It may be mentioned that the owner of the dog noticed something peculiar about the animal's

eyes: "they had lost their roundness, appeared flatter, and the skin shrivelled up." The tongue was very dark-coloured and hot, but did not protrude from the mouth.

This description we owe to the kindness of Mr. Hewitt, the owner.

On the 9th, Mr. Martin saw the dog, and was particularly struck with the very extraordinary and alarming appearance he presented. The lower jaw was pendulous, and saliva flowed from the mouth; the eyes had a silly, vacant expression; and the animal wandered half unconsciously about. He appeared to be weak in his hind-quarters, more especially when he tried to place his fore-paws on a bench. When called he ran about in a blundering manner, as if conscious but stupid. Altogether, he had a peculiar and indescribable expression which Mr. Martin had never witnessed before; and satisfied of the great danger incurred by allowing the creature to live, he recommended his destruction. This was accomplished by Prussic acid. No examination was made of the body.

This information has been furnished by Mr. Martin, who, in the course of conversation on November 20th, casually mentioned this case, expressing his conviction that it was one of Rabies.

The following morning (November 21st), we received a note from Major Browning, Royal Engineer paymaster, requesting us to give an opinion as to what was the matter with a dog belonging to Mr. Sinclair, one of his clerks. Strange to say, this was the small dog bitten on November 6th by the retriever above alluded to. At my desire the animal was conveyed from Mr. Sinclair's house to barracks in a basket. At the first glance there could be no doubt whatever as to the presence of Rabies in that form known as "dumb-madness." It was elicited that, when attacked by the other dog on the 6th, a hurried examination was made to see if he had sustained any damage, but nothing was noticed; subsequently, however, a small scar was found on the left ear and another on the back of the neck. Up to November 19th no change was noticed in the dog's manner, except that shortly before that date he seemed to desire seclusion, running off to his bed-place at every opportunity; whereas usually he was very sociable and fond of company. It may be

noted that he was a very nervous and sensitive animal. On the 21st he appeared to be rather lazy. In the afternoon, however, he walked about three miles; though he did not run about playfully as usual, but rather lagged behind. It was noticed that his mouth was slightly open. In the evening he was very quiet, but ate some pieces of meat and lapped a little milk. His throat seemed to be sore. Next morning he was much worse, and his hind-quarters were so paralysed that he could scarcely walk. When an attempt was made to lift him, he made a snap as if to bite.

When removed from the basket for our inspection, the first startling and diagnostic symptom was the pendulous lower jaw, with partial protrusion of the tongue. The posterior extremities were completely paralysed; though the dog could raise itself on its fore-limbs. There was trifling protrusion of the *membrana nictitans*, and the pupils were widely dilated; a somewhat copious discharge of saliva was noted from one or other angle of the mouth; but there was no nasal discharge. The head was carried somewhat round to the left side, as if the left ear—the one bitten—was painful; and there was that peculiar characteristic, half-stupid, half-sad expression of face, made all the more striking by the wide-gaping mouth, which marks this form of the disease. A curious gurgling kind of noise was heard in the upper part of the throat during respiration, as if the larynx was partially obstructed; while respiration itself appeared to be chiefly abdominal, and at intervals, when the creature was disturbed, even paroxysmal. There was no indication of ill-temper, though the dog had tried to bite his owner that morning; indeed, he appeared to be quite inoffensive. He could not eat any food: when some small scraps of meat were laid before him, he smelled at them, and contrived with great difficulty to "shovel" one or two of them into his mouth, though unable to close the jaws, and in a gulping manner swallowed them after a time. Water and beef-tea were subsequently placed beside him, but he did not, so far as could be ascertained, attempt to partake of either. It is needless to say that not the slightest dread of water was manifested. The temperature, unfortunately, was not taken.

Being anxious to note the course of the disease, and having

safe accommodation for the dog, he was kept for further observation. Compelled to be away for the remainder of the day, we did not visit the creature again until the next morning, when we found him nearly dead. In the interval he had not touched water or beef-tea. He lay on his left side completely motionless; except for a very slight continuous movement of the front paws, he was quite unable to stir. The surface of the body was very cold, and when the thermometer was introduced into the rectum and pharynx the index did not rise beyond the lowest point at which it had been set—35° Cent. (95° Fahr.) The pupils were contracted to the smallest dimensions—a small quantity of matter had collected in the inner corner of each eye, and the *membrana nictitans* protruded more than on the previous day. There was marked strabismus of the right eye, with slight opacity and breaking-up of the centre of the cornea. The mouth was widely open, the lower jaw being relaxed to its utmost extent, though it was easily moved; the tongue hung out from one side, and the interior of the cavity was dry and brownish-coloured. A very small quantity of viscid saliva was suspended from the dependent angle of the mouth. A strange half-gulping, half-moaning, rather loud noise came from the throat; this noise, with the respirations, was at times feebly spasmodic.

The creature was, it seemed, totally unconscious; and as it was evident that death would soon take place, and nothing further could be learned from the symptoms, he was destroyed by chloroform.

The autopsy was made about three hours afterwards. There was not the least approach to *rigor mortis*. Some urine had escaped either before death, or while the body was being carried into the surgery for examination. The pupils were dilated, and one angle of the mouth was moist with tenacious saliva. On each side of the frænum of the tongue, as well as on its dorsum and on the soft palate, were irregular brick-red patches. The gums were reddened and ulcerated around the fangs. There were no *lyssæ;* and the only remarkable feature in the upper air-passages was the paleness of the mucous membrane, especially that of the larynx. There were patches of deep congestion on the mucous membrane of the stomach, which contained a

small quantity of partially digested food and three or four pieces of straw and hay. The intestines were healthy, their contents were soft and normal, and we did not find a trace of entozoa of any kind. The kidneys and bladder were healthy, the latter being partially distended with urine; the spleen was small and contracted. The other abdominal and the thoracic organs were normal.

The membranes of the brain were congested, and the anterior lobes of the organ itself were rather softened and hyperæmic. There were no other perceptible alterations in the nervous apparatus; indeed, the most notable circumstance in the autopsy was the general absence of marked pathological changes, considering the rapidity with which the disease ran its course and the striking severity of the symptoms. But this peculiarity we have observed in other cases of Rabies.

We have entered into these details with regard to this and the retriever dog, to show that there could be no mistake as to the nature of the disease. Whatever doubt may have existed with regard to the malady affecting the retriever, was set at rest by the result of the inoculation inflicted by him upon the small dog —an inoculation which was in the nature of a successful experiment; and the result could not have been more satisfactory, so far as deciding the nature of the affection is concerned, had it been an experiment conducted by an investigator with a view to solving any existing doubts.

What is particularly noteworthy in the entire history, and is the only apology we can offer for claiming so large an amount of our readers' attention, is the fact that the dog which "worried" the retriever, and thus constituted himself the *fons et origo mali*, is now *alive and well*, and has *never* been observed out of health in any way. It would be a source of satisfaction could we now convince ourselves that Rabies never arises *spontaneously*, and that the bite of a healthy dog could not produce it. But we confess that we cannot resist the stern logic of facts, try as we may.

THE HEREDITARY TRANSMISSION OF GLANDERS.

BY T. PATON, M.R.C.V.S., ARMY SERVICE CORPS, DUBLIN.

BEING a firm believer in both the spontaneous and contagious origin of Glanders, which I hold to be identical with Tuberculosis, allow me to record a case of hereditary transmission of the latter, which came under my observation some years ago, as it seems to support the former view, and certainly does so if the identity of the maladies comes to be proved. Assuming my hypothesis to be correct, my experience leads me to believe that inherited delicacy of constitution, conjoined with debilitating agencies, is a very fertile source of the malady; the virus of which, like other septic matters, once it has been eliminated, is capable of wide diffusion by contagious propagation, to which the strongest *may* succumb; but there are many whose non-receptivity is so great, that on them its assaults are harmless. Therefore, it may be inferred that we need not rely on the contagion theory so exclusively as those do who hold the opinion that that is the only way in which it arises, or is continued. Taking into consideration the operation of those causes which undoubtedly produce original cases of Tuberculosis, the apparently eccentric and otherwise unaccountable outbreaks of Glanders so frequently occurring, may probably be due to the forces at work in the tubercular process.

On some future occasion I purpose to return to this subject.

An imported mare by "Wild Dayrell," belonging to the King William's Town Stock and Produce Company, South Africa, presented a considerable enlargement of one of the submaxillary glands, which resisted all the usual applications for its reduction; and although there were no other urgent signs, I was somewhat anxious about her, especially as she was one of the finest mares the Company possessed. In due course she produced a foal, by a perfectly healthy sire, "King William"; no finer colt could have been desired when dropped, but in less than a week it suddenly became embarrassed in its breathing, and the dyspnœa was so extreme that it died in about forty-eight hours from the

commencement of the attack. The *post-mortem* examination showed its otherwise healthy lungs literally crammed with tubercles of a regular size—about that of small peas—and which were as regularly and fully distributed through both lungs as currants in a well-made Christmas pudding. These tubercles were, doubtless, sown in the fœtus by the maternal circulation.

Finally, I believe that in all cases of undoubted Glanders, tubercles are to be found in some of the viscera or lymphatic glands, if diligently sought for; and that the lesions characteristic of that disease are due to the disintegrating action of tuberculotic changes.

[Mr. Paton's communication is interesting, and the case he describes is a valuable addition to those we have enumerated, when alluding to the hereditary transmission of Glanders, in vol. i., p. 530, of *Veterinary Sanitary Science and Police*.]

POISONING OF ANIMALS BY SEWAGE WATER.

In our last number (p. 49), we alluded to the death of horses and cattle from drinking water contaminated by a large amount of organic impurities, and alluded to its general resemblance to sewage. Professor Voelcker, who examined this water chemically, has kindly furnished us with the analysis he made of it; and as this is very instructive, we subjoin it. All the animals partook of this water for a month, but the horses were not fed on the same kind of food as the cattle. One horse died with symptoms of blood poisoning on October 30th, the other animals on November 1st.

Constituents Combined.

Oxide of iron and alumina	2·36
Organic matter and salts of ammonia*	95·91
Phosphate of lime	9·19
Sulphate of lime	1·95
Carbonate of lime	35·16
Carbonate of magnesia	16·63
Chloride of sodium	62·29
Alkaline carbonates	45·44
Silica	7·01
Total residue per gallon at 130° Fahr.	275·94

* Containing nitrogen	6·26
Equal to ammonia	7·60

Editorial.

HORSE-TRAVELLING IN FROSTY WEATHER.

For very many years our attention has been anxiously directed to some means by which horses could be effectively utilised, and at the same secured from accidents, on ice-covered roads; instead of resorting to the very inconvenient, slow, expensive, and injurious practice of "roughing" or "sharpening" the shoes, commonly in vogue. From a military point of view the matter is most important, as we have demonstrated in "Horse-shoes and Horse-shoeing," when referring to the retreat of the French army from Russia in 1812, and the Danish retreat from Schleswig to Sonderburg in 1865 (pp. 619, 620). Our personal experience in the Crimea, during the severe winter of 1855-56, also proved to us how absolutely helpless an army in the field is when frost and snow prevail.

But it assumes, perhaps, a still greater importance in civil life, and particularly in our large cities and towns; and those who traverse the streets of such a busy Babel as London, and visit some of the large farriers' establishments during a frosty day, will, we think, be inclined to agree with us that few boons could be of more value to the public, and to horses themselves, than some simple, effective, and easily applied means of securing a good foothold on slippery roadways. We have had some experience of the damage and loss inflicted upon horse-owners by the ordinary method of "roughing"; and we are sure our professional colleagues will share in the opinion that many horses are seriously injured, and even destroyed, through it.

We have, with the above object in view, tried every contrivance and method proposed, but invariably found them objectionable, either through their inefficiency, expensiveness, or the difficulty of procuring or applying them when required for immediate use. Some four years ago, in conversation with Count Pratasoff Bechmeteff, Colonel of the Emperor of Russia's Body Guard, the idea of a simple steel stud fitting tightly into a square hole in the horse's shoe suggested itself.* The following winter we commenced a series of trials; and after much trouble and more thought than the present simple contrivance would lead one to suspect, we succeeded in our attempts, even beyond our anticipations. But we did not make this success known until the method had been severely and largely tested, in order to satisfy ourselves as to its adaptability. When in London one frosty day during the winter of 1874-5, we were exceedingly pained to witness the suffering the unfortunate horses underwent in trying to maintain their footing, and still more shocked to see some serious, even fatal, accidents in the public thoroughfares.

We thereupon published in the *Times* a description of our method,

* A few weeks ago a notice of this method appeared in the *Sanitary Review*, and it was stated that it was in use in Russia. This is an error, probably due to the fact that the origin of the frost-studs, as alluded to above, we casually mentioned in the second edition of "Practical Horse-shoeing." We are not aware that the method was in use anywhere previous to our introducing it.

and the success which had attended, and was then attending, it at Chatham. This brought upon us an amount of correspondence which we certainly did not bargain for, but it had the beneficial result of affording the method a very extensive trial; and the Royal Society for the Prevention of Cruelty to Animals lost no opportunity for giving it still wider publicity, especially through its most useful and commendable organ—the *Animal World*. The testimony in favour of its great advantages is overwhelming, and is being every day added to by those who tried it during the frost in December and January last. The stud is a simple bit of steel, of any convenient length—about an inch is found to be very serviceable—square, pointed at one end, and slightly tapering from about the middle at the other—that which enters the shoe. No filing or finish is necessary. The portion of stud which enters the shoe has a little more taper than that shown in the woodcut.

FIG. 4.
Horse-shoe and Frost Stud.

The following extract from the *Animal World* for January will, perhaps, be sufficient to supplement these remarks on what we believe many of our readers will thank us for drawing their attention to, especially if their solicitude for the introduction of what is useful and practical to mankind, as well as humane to animals, be as earnest as our own :—

"During the recent severe weather nothing could be conceived of a more painful nature than cruelty to horses overladen or unprovided with shoes to prevent slipping. The scenes witnessed in the streets were shocking. Briefly let us entreat owners to reduce their loads one-half, at least, should such weather return, and at once prepare their shoes for the employment of Mr. Fleming's stud, which has recently been used with perfect satisfaction. Besides our own direct information, Mr. Fleming writes :—

'You will be glad to hear that our method of enabling horses to travel

safely on slippery roads during frosty weather, by fixing two or three steel studs on each shoe, has again answered admirably this winter, our troop horses having been out every day during the late frost and snow, and the transport horses having been on convoy duty to Maidstone and Gravesend, travelling over a very hilly and difficult country.

'Our draught horses have a stud at the toe of each shoe, as well as one at each heel; but we find that, when a little snow is on the ground, a secure foothold is maintained with only one stud in each shoe.

'Two things have to be attended to in this matter: 1. The stud must fit tightly in the hole, without "wobbling" in any way. 2. It must not pass quite through the shoe, or the hoof will push it out.

'To fix the stud in the shoe, it should be driven into the hole by one or two smart taps on the point.

'The method, in addition to its simplicity and great efficiency, is wonderfully cheap. An old horse-rasp, value threepence, will, when drawn out as a square rod of steel, suffice to make eighty-two studs, which one of my troop farriers can knock off in an hour. A set of these will last for a number of days.

'When required to be taken out, a few taps on each side are sufficient for the purpose.

'The hole in the shoe, slightly tapering, is made with an ordinary square punch, and the farrier's eye alone gauges the size of the studs, every one of which is made at one heat.

'Every shoe put on our troop horses at the end of October and commencement of November had the holes punched in it; and, as a large number of studs were lying in readiness, when the frost set in the horses were rendered proof against slipping in a few minutes, without going near the forge. This saved a great amount of expense and time, as well as labour to the farriers, in addition to preventing damaged hoofs and much lameness.

'About five per cent. of the studs fell out, but as they are so cheap this is of no moment; and, as I have said, we found that one stud per shoe affords a good foothold. On long marches a few spare studs were carried. The studs never break in the shoes.

'They have now been extensively tried on riding, light harness, and draught horses, and I have never found anything to equal them for simplicity, cheapness, efficiency, and ready adaptability.

'Civilian farriers, as a rule, do not like the method, because it does not pay them nearly so well as the ordinary inconvenient, expensive, and injurious mode of "roughing"; but to my farriers, who only receive a very small sum *per diem* for providing the materials for shoeing, it has proved a great boon, and they now resort to it voluntarily at the end of autumn.

'I have thought these remarks on winter shoeing might prove interesting and beneficial to horse-owners, and be the means of sparing horses much fatigue and risk to limbs—even to life—during the worst season in our climate.

'The method is applicable to any form of horse-shoe.'"

THE ESTABLISHMENT OF A VETERINARY COUNCIL IN GERMANY.

In the *Veterinary Journal* for November last (vol. i., page 366), we alluded to certain very important reforms which were about to be carried out in Germany with regard to veterinary education, and to the more beneficial utilisation of veterinary science in that country. We now learn that, by an Imperial decree dated May 21, 1875, a Central Veterinary Council or Department, composed of veterinary surgeons, was to be established. The decree is as follows :—

1. In immediate subordination to the Minister for Agricultural Affairs, a Technical Deputation, representing the veterinary profession (*eine technische Deputation für das Veterinärwesen*) shall be established in Berlin. This will consist of a President, and of a number—varying according to requirements—of ordinary and extraordinary members. At least one-half the number of Ordinary Members shall possess the qualifications of Department Veterinary Surgeons.

The Deputation may have Assistants, who will have the right to vote.

The President is to be nominated by the Emperor. The members and assistants will be appointed by the Minister for Agricultural Affairs. The President, members, and assistants of the Deputation will perform their functions by virtue of revocable orders.

2. The duty of the Deputation is to assist the Minister for Agriculture in the management of veterinary affairs, by affording him technical advice. The Deputation will be likewise required to furnish : (*a*) The compensation decisions, and opinions on technical questions, when required by the law or government officials ; (*b*) The preparation of cattle and cattle-disease statistics ; (*c*) Reports of the proceedings of the examining boards which test the capabilities of those who present themselves for election as qualified veterinary surgeons, and also those who apply for government employment as District or Department veterinary surgeons, with reference to the prescribed examinations and their results.

The co-operation of the Deputation with regard to the veterinary police measures for the prevention and suppression of animal plagues, is governed by legislation.

3. The resolutions of the Deputation are framed according to the majority of votes. When there is a division, and the number of votes is equal on both sides, the President's vote will decide.

4. In framing resolutions in judicial cases, or with regard to fixing the compensation allowed by the State to individuals whose animals have been killed in carrying out the police regulations, only those members and assistants are entitled to vote who possess the certificate for competency prescribed for physicians or Department veterinary surgeons, or who act as Ordinary or Extraordinary Professors in the medical faculty of a university, or as regular teachers in a Prussian veterinary school.

The carrying out of these duties can be conferred on a particular section of the Deputation. The rules for guidance are based on the resolutions of the section, which are to be governed by paragraph 3.

5. The prescribed examinations for appointments in the government service as District or Department Veterinary Surgeon, are drawn up by one of the members and assistants of the Deputation for appointing to these posts. All the members of the Examination Committee must possess the qualifications indicated in paragraph 4, and are to be nominated by the Minister for Agriculture. They will present detailed directions as to the constitution of the Examination Committee, the admission to the examinations, and the framing of the examinations according to regulation.

6. The current affairs of the Deputation are to be discharged by the members and assistants composing it.

The co-operation of the Extraordinary Members extends to the more important questions connected with organisation and agriculture. Their assembling takes place according to the orders and arrangements of the Minister for Agriculture. As for the rest, the business of the Deputation is directed by instructions issued by the Minister for Agriculture.

7. The Minister for Agriculture is authorised to carry out these orders.

PARIS ACADEMY OF MEDICINE.

At the *Séance* of the Academy of Medicine of Paris, held on December 21st, our eminent colleague, M. Bouley, Inspector-General of the veterinary schools of France, was elected by seventy-two against seventy-four votes, to the high office of *Vice-President* for 1876; consequently he will occupy the distinguished post of *President* of the Academy in 1877. M. Bouley justly merits this very flattering recognition of his services to medicine—human and comparative; as for many years he has not only been acknowledged as the most zealous and accomplished veterinarian in France, perhaps in Europe, but for a long period he has occupied a very prominent position at these *Séances*, no member of the Academy being listened to with more attention and interest when discoursing on comparative pathology. The Academy, no less than its talented Vice-President, is to be congratulated on the election, which reflects honour on both.

THE LYONS VETERINARY SCHOOL.

By a ministerial decree, dated November 20, M. Chauveau, Professor of Anatomy, etc., at the Lyons Veterinary School, is appointed Director of that School, in succession to Professor Rodet, whose demise we chronicle in our obituary. M. Chauveau was not Dean of the School, and this exaltation has been conferred upon him as an acknowledgment of his valuable scientific work.

VETERINARY SCIENCE IN JAPAN.

We have much pleasure in announcing that the Japanese Government, having decided to introduce Western notions of veterinary and agricultural science into that advanced and advancing Eastern country, has just concluded an engagement with Professor J. A. McBride, M.R.C.V.S., of the Royal Agricultural College at Cirencester, who is entrusted with the important task of organising a Veterinary Department at Tokei or Yedo, the capital of Japan, and delivering a course of lectures to students of agriculture. We have all the more satisfaction in making this announcement, as we believe this is the first occasion on which a member of our profession in this country has had an opportunity of entering the service of another nation as a teacher—the French and German schools having hitherto furnished candidates for foreign governments.

We are certain that Professor McBride will carry with him the good wishes of his colleagues; and we have no doubt that in this very beautiful part of the world, which is inhabited by a most interesting people, he will do all in his power to worthily represent and advance his profession. The *Agricultural Student's Gazette* gives expression to the high estimation in which he was held at the Cirencester College, in the following terms :—"It is with extreme regret that we have to announce the resignation of our esteemed professor, Dr. McBride. Ten years have passed since he first set foot in this college, during which time several hundred pupils have received instruction from him in veterinary science and practice, and all have liked and respected him, both for his thorough ability as a teacher and for his kind and friendly interest in each one. The Doctor has received an appointment as head of the veterinary department in Japan, and he leaves us with the best wishes of all for his prosperity and success in that country. He has been presented by the students with a gold chain and locket, as a testimonial of their esteem and good feeling towards him."

At the Christmas examinations, in the absence of Dr. McBride, the Principal read the report on Veterinary Surgery, and added that he could hardly pass it over without some remarks as to the loss they had sustained in the removal of Professor McBride from among them, after a connection of ten years with the institution. In that period Mr. McBride had won their respect and esteem, and had made himself eminently useful; he had also done much to advance the interests of the College and the reputation of his department. They could only wish him great success in his new sphere of labour, and hope that he would there be as useful a man as he had been at the Agricultural College.

We shall expect much interesting and valuable information from Professor McBride, when he has had time to collect it; and in our next number we will, if space permit, offer a few remarks on subjects connected with veterinary science in Japan.

ORGANISATION OF THE VETERINARY COLLEGE AT COPENHAGEN.

THE Royal Danish Veterinary School, which was founded in 1773, by the talented veterinarian, Abildgaard, was, in 1858, re-organised and changed to a Royal Veterinary and Agricultural High School, and removed to the suburbs of Copenhagen. By this arrangement, veterinary instruction can be directly carried out at one school; and in it are taught, as well, agriculturists, surveyors, gardeners, and foresters; though the education of these latter is chiefly theoretical. Owing to the number of departments or sections in the school, there is a better opportunity for more student classes, and more particularly for special instruction for each class in its own special branch of science.

This High-School (which is, of course, national) is under the control of the Minister of the Interior, and is presided over by a Director, who does not teach, but who is a member of the Privy Council. The present director is Doctor C. E. Fenger. To assist the Director in the administration of the establishment, an agriculturist is associated with him.

The number of teachers is eighteen, ten of whom are appointed by the Government for duty only in the school: the other eight belonging, more or less, to the University, the Polytechnic, and other schools, or being otherwise employed. Ten assistants are, in addition, engaged in tuition in the various sections; and there is also a Pharmaceutist in the Dispensary.

As a veterinary surgeon requires a special training, instruction is given in the following subjects, by the teachers whose names are affixed:

ANATOMY, WITH INSTRUCTION IN DISSECTION, AND PHYSIOLOGY.—By Dr. and Councillor Bendz.

INTERNAL PATHOLOGY AND CLINICAL INSTRUCTION IN THE HOSPITAL STABLES OF THE SCHOOL (*Stationary Clinic*).—By Professor Bagge.

CHEMISTRY AND PHARMACY.—By Professor Barfoed.

EXTERIOR, ZOÖTECHNY, HYGIENE, AND THEORETICAL FARRIERY.—By Professor Prosch.

SURGERY, SURGICAL OPERATIONS, OBSTETRICS, AND EXTRA-MURAL CLINICAL INSTRUCTION (*Ambulatory Clinic*).—By Professor Stockfleth.

BOTANY.—By Professor Lange.

PHYSICS AND METEOROLOGY.—By Docent Fjord.

ZOOLOGY.—By Professor Schiödte.

VETERINARY JURISPRUDENCE.—By Docent Bay.

PRACTICAL FARRIERY.—By Docent Green.

The average number of pupils attending the school every year since 1858 has been about 250; the greater proportion of which was always composed of veterinary and agricultural students. The number of veterinary students from 1858 to 1866 was above the usual number; since then it has considerably decreased, as the following figures will testify, while they show the provinces whence the students came, as well as the number of veterinary surgeons who obtained their diploma.

Scholastic Year.	*Denmark.*	*Schleswig.*	*Holstein.*	*Norway.*	*Total.*	*Of these were Veterinary Surgeons.*
1858—1859	68	13	6	21	108	14
1866—1867	127	15	3	14	159	35
1872—1873	57	12	—	7	76	16

The students must provide their own maintenance and lodging. Admission to the lectures and practical teaching is open to every one upon payment of a fixed, but very moderate, sum. A free education and scholarship, or bursary, can be obtained if the student or pupil enters his name; moreover, it is necessary that he produce a certificate that he has received a certain specified general education, which is, however, considerably less than is required for matriculation in the University. A knowledge of Latin is not required. For the promotion of this preliminary education, and to confer a higher value upon it, those who are in possession of it, and wish to present themselves for the examination in veterinary medicine, which is not indispensable, can do so if they have studied at the school; only the candidate must have attended for one half-year the ambulatory clinic and the lectures on veterinary jurisprudence.

The scholastic year commences on the 23rd of August, and the annual period of instruction consists of two sessions of six months each—from August 23rd to January 31st, and from February 1st to July 6th. Although the student is at liberty in the matter, with regard to attending the lectures, yet the instruction is so arranged that these may occupy a course of six sessions—though, as a rule, four years is the period of study—if the following plan is pursued :—

1st Session.—Physics and meteorology (six hours per week); inorganic chemistry (four hours *ditto*); zoology (four to six hours *ditto*); practice in the shoeing forge (twelve hours *ditto*).

2nd Session.—Physics and meteorology (two to three hours a week for the two first months); organic chemistry (three to four hours per week); botany (two to five hours *ditto*); anatomy and physiology (five hours *ditto*); general zoötechny (five hours *ditto*); practical botany (*pflanzenbestimmen :* one hour *ditto*); practical farriery (twelve hours *ditto*); practical horse-keeping (twelve hours a-week for one month); stationary clinic (twelve hours per week).

3rd Session.—Botany (seven hours per week for a month); anatomy and physiology (five hours per week); general zoötechny (four hours *ditto*); theoretical farriery (two hours *ditto*); pharmacy and pharmacology (two hours *ditto*); pathology and therapeutics (three to four hours *ditto*); surgery (three to four hours *ditto*); veterinary jurisprudence (two hours *ditto*); practical botany (one hour weekly for a month); practical farriery (eight hours per week); dissection—exterior (one hour *ditto*); stationary clinic (twelve hours *ditto*); practical pharmacy (twelve hours).

4th Session.—Anatomy and physiology (five hours weekly); general zoötechny (five hours *ditto*); pathology and therapeutics (three to four hours *ditto*); surgery and obstetrics (three to four hours *ditto*); veterinary uris prudence (two hours *ditto*); dissection, operative surgery (four hours

ditto); practical farriery (eight hours *ditto*); stationary clinic (twelve hours *ditto*); practical pharmacy (twelve hours *ditto*).

5th Session.—Pathology and therapeutics (three to four hours weekly); surgery (three to four hours *ditto*); dissection, operative surgery (four hours *ditto*); practical farriery (eight hours *ditto*); stationary clinic (twelve hours *ditto*); practical pharmacy (twelve hours *ditto*).

6th Session.—Practical instruction in the ambulatory clinic and in veterinary jurisprudence.

The veterinary examinations take place in April and October, and are divided in two parts; the first of these is in pure natural science only, the second is in the other branches of veterinary science, and are conducted in writing, and practically and orally.

THE ONTARIO VETERINARY COLLEGE.

THE *Daily Leader* of Toronto, Upper Canada, announces that the special class for junior students in the Ontario Veterinary College was to be opened on January 5th, 1876. It adds:—

"The present term has been attended by a large number of second and third year students. This college, though established only a few years, has already won for itself a Continental fame; and it is one of the few institutions in Canada which has cost the country comparatively little, considering the enormous advantages which it has conferred on the agriculturists of the Dominion. It would be a fitting compliment to the worthy President, Dr. Smith, if the Government now in session here would recognise its public merits by a handsome grant. As we understand, it is the intention of the President to establish a library, etc., at as early a day as possible, for the benefit of students and practitioners in the veterinary art generally. It is pleasing to observe from our Canadian and American exchanges, that the graduates of this college are daily meeting with marked success in the practice of their profession."

VETERINARY STATUS.

THE *Bombay Gazette* publishes a revised list of those grades in Indian society who have the distinguished privilege of the private *entrée* to Government House, Calcutta, and to the Governor-General's levées. In glancing down the list, it is gratifying to find that our profession has not been overlooked, and that the Inspecting Veterinary Surgeon is allotted a distinguished place between the Postmaster-General and the Oriental Translator to Government. This recognition cannot fail to give satisfaction to our colleagues in India.

THE OUTBREAK OF FOOT-AND-MOUTH DISEASE IN AUSTRALIA, IN 1871.

THE *Times* of October 26, 1875, in a leading article on Foot-and-mouth disease, makes several allusions to the details we have given in "Veterinary Sanitary Science and Police," relative to that malady, and mentions what we stated with regard to the introduction of the disease into Sydney by a bull. The passage in "Veterinary Sanitary Science," vol. i., p. 461, runs as follows: "One of the outbreaks in Australia in 1872 is said to have been due to the importation of a cow or bull from Britain, which had exhibited no symptoms of the disease during the voyage; the virus is believed to have been present in the last truss of hay given to the animal, which sickened therefrom as it entered Sydney harbour." The allusion in the *Times* to this case attracted the attention of a gentleman, now in this country, who appears to have been one of the principal witnesses and actors in the matter, and in the course of the correspondence which ensued on his writing to us, some facts come to light which are of more than historical importance, and deserve to be recorded. We will, therefore, take the liberty of transcribing the greater portion of a letter received by us on November 6th last; containing, as it does, not only the history of the outbreaks, but also an account of the energetic action which saved the Australian colonies from a harassing and very expensive scourge—action which, if it had been exercised as promptly when the contagious Pleuro-pneumonia was carried there, would have spared them from almost incalculable loss and grave embarrassment.

Our correspondent writes: "I notice the allusion to the bull in vol. i., p. 447. This occurrence took place, if my memory serves me pretty correctly, about the third or fourth month in the year 1871; but instead of one bull it was two: one a white Durham, about one year old, imported by ——, the other somewhat older, and a Hereford, imported by ——. I saw both these animals, and this was the first, and I may say the last, time I ever witnessed Foot-and-mouth disease, I then looked upon it as a malady which Australia, a 'hot climate,' ought to at once stamp out. These two bulls, with other bulls and cows, were not quarantined on an island at first, but were disembarked on a piece of land adjoining 'Dawe's Battery,' and battened off from the street above, to prevent every one from approaching the place. However, it was found in a very short time that the place was not the most desirable for such diseased animals; some splendid milch cows belonging to the Artillery Brigade had to be destroyed in consequence of their close proximity to these sick creatures, and it was after this that they were removed and close quarantined on an island. I then lost sight of them.

"Shortly after, in the same year 1871, my attention, with that of other squatters, was drawn to the arrival of a ship, the name of which I now forget, which had a Hereford cow on board affected with Foot-and-mouth disease. I and others saw Mr.——, and communicated with the government of the day, urging the necessity for destroying the animal; but we were pooh-poohed, the authorities laughing at the disease as

nothing, although an Act was then in force, called the "Cattle Disease Prevention Act," with £1,600, or thereabouts, to its credit for the destruction of diseased stock. So the government would not destroy the cow. It then became imperative upon us—the "squatters"—to do what we could to prevent this cow landing; so a few of us, consulting together, came to the conclusion that we had better write to the owner to have her destroyed; at the same time offering him remuneration. This he accepted, and in less than forty-eight hours the cow was *hors-de-combat* in the briny ocean, six miles from the Sydney Heads, the fittings, etc., pitched overboard, and the ship disinfected.

"This is the true story of Foot-and-mouth disease in Australia, if my memory serves me correctly; quick and determined action being the only means of preventing its gaining a footing on our shores by the destruction of this cow. I may here mention, in conclusion, that *four* Hereford cows left these shores in the same ship, *three* of which died before sighting Sydney; all were, I believe, consigned to the same party. Thus the prompt action. I enclose you a letter that will prove to you how little the owner thought of the disease, as well as 'receipt' and 'slip.'"

The receipt is an acknowledgment for £200 paid on November 16, 1871, for an imported cow destroyed by the owner at the request of our correspondent and others; the letter is from the owner, who was irate at the "wanton" destruction of his cow; and the "slip" from the *Melbourne Mercury* has reference to a proposed testimonial to our correspondent, to whom we must tender our thanks for this welcome addition to the history of epizoötic diseases.

THE DEVELOPMENT OF CYSTICERCI OF THE TÆNIA MEDIOCANELLATA IN THE GOAT.

In contradiction to Zürn's experience, Zenker has shown that the unarmed tapeworm can be developed in the muscles of the goat. In 1872, he gave a goat some proglottides of a very fine *Tænia mediocanellata*. Five weeks after their administration, a small portion of muscle was removed from the back, and this was found to contain two *Cysticerci*. One of these measured 1·3 millimetres in diameter, and had a distinctly visible head and neck, though the suckers were not seen; the second only measured 0·8 mm. in diameter, and the head and other details could not be made out. On the twelfth week the goat was killed, and on examination of its carcase there were only found, as a rule, cheesy-calcareous deposits in the muscles and connective tissue, instead of distinct *Cysticerci*; these having undergone this change, and left no other trace of their presence. The exception to the rule was the discovery of two living and perfectly developed *Cysticerci*, which had the characteristic hookless head and the four suckers well defined.

COLOURS OF HORSES.

(*Pall Mall Gazette*).

IN a letter which appeared in the *Times* a short time ago, Lord Calthorpe, offering to contribute handsomely towards a fund to be expended for the encouragement of horse-breeding in Great Britain and Ireland, mentioned horses of "a good colour." Is there such a thing, inthe abstract, as a good colour for a horse? The ancients, no doubt, attached considerable importance to the colour of a horse, as is only too well known to every schoolboy whose classical education has been carried as far as the third book of Virgil's Georgics, and has taught him the following general rule :—

Honesti
Spadices glaucique ; color deterrimus albis
Et gilvo :

though the information is not worth so much as it would be if critics, commentators, and others could be quite certain what colours are intended. The moderns, for the most part, have contented themselves with taking up the unassailable position asserted in the saying that "a good horse cannot be a bad colour ;" which, after all, looks very like a begging of the question. One thing is pretty certain, and that is, that the Derby Day which sees one of those animals which ladies are, perhaps unjustly, supposed to specially admire, such as the cream-coloured brute bestridden sometimes in Rotten-row by a dapper "tailor," winning in a canter or in any other way will deserve the best attention of Dr. Cumming or some other skilful interpreter of portents. In all such questions we naturally turn the eyes of inquiry towards Arabia ; and the preference of the Arabs for a particular colour is evinced very characteristically. "If you are told," says one of their precepts, "that a horse has been seen flying in the air, ask what colour it was ; and if the answer be 'chestnut,' believe it." Their traditions also contain a story telling how an old Arab chief and his young son were on a day flying before their enemies. The chief's eyes were dim with age, and there were in those days no field-glasses ; he had, therefore, to depend on the younger eye-sight for all that could be seen of the pursuers. "My son," said he, "what horses do they ride?" "My father," was the answer, "they be white horses." "Go we, then, towards the sun, and they will melt away as the snow." After awhile the chief again asked : "What horses now, my son?" "My father, they be black horses." "Go we, then, on the hard ground, and their hoofs will cleave to the earth." A third time the chief asked : "What horses now, my son?" "My father," was the answer, "they be chestnut horses. "Quick, then, quick!" exclaimed the old chief, "or we be dead men." So highly, apparently, is the chestnut esteemed among the Arabs ; though, according to authority, the chestnut and the white or grey are far more common in Arabia than the bay, the black, or the composite, whereas excellence and rarity might appear to some people most likely to go together. But they to whom it so appears must remember two things—first, that the very excellence would lead to a studied reproduction, which would in time cause superabundance to take the place of the original rarity ; and then that, the superabundance having once been established, there is not only the primitive superiority to rely upon, but also the increase of chances produced by numerical increase. In honour of the chestnut, again, the French have a saying, "Alezan brûlé, plustôt mort que lassé." And the question arises, which of the very many shades of chestnut is alluded to? "Brûlé" is explained to mean "foncé" to such an extent "qu'il se confond parfois avec le noir, et qu'on ne peut l'en distinguer qu'aux crins ou aux extrémités ;" if so, what is "alezan moreau"? Perhaps the two terms express the same thing. Whether we English have

any proverbial saying in honour of the chestnut may be known to somebody; but there is no doubt that among our racehorses the chestnut has very much distinguished himself. It is, of course, dangerous to trust to memory or to anything save unimpeachable authority; but those who choose to take a little trouble, or, without trouble, have the necessary means of reference at hand, can ascertain for themselves whether it be not correct to state that the incomparable Eclipse was a chestnut, and that, of late years, at any rate, the chestnuts "have it," so far as racehorses are concerned. Among the chestnuts, under correction, would be numbered Stockwell, Thormanby, Kettledrum, Blair Athol, Hermit, Favonius, Prince Charlie, Doncaster, Gang Forward, George Frederick, Fille de l'Air, Regalia, Formosa, Gamos, Marie Stuart, and Apology. A formidable array of bays and browns, including the honoured names of West Australian, Beadsman, Macaroni, Gladiateur, Lord Lyon, Blue Gown, and Achievement, might be collected on the other side; but, especially if successful sireship were allowed to count, it is probable that the majority of voters would be found in the lobby with the chestnuts. The taste for bays is, perhaps, most prevalent in England, partly because the chestnut is believed to be peculiarly subject to infirmities of constitution and of temper; and it is said that in France under the Second Empire the same taste was carried to an extreme. It is asserted that, with the exception of a few saddle-horses, all the horses admitted into the Imperial stables were required to be not only bays, but "bais zains"—that is, bays without a single white hair. And it must be admitted that a complete bay, with mane and tail and four legs perfectly black, is as handsome a quadruped as eye can see. But, as even the master of a hundred legions cannot always obtain what he wants, but must nevertheless always appear to have had his will obeyed, it is not surprising to learn that the stables of the Third Napoleon were no strangers to a little of the horse-tinker's art, and that "on teignait les balzanes ou les pelotes des animaux atteints de cette imperfection de convention"—which animals, by the way, it is drily added, "were the greater number, inasmuch as the 'zain' is always an exception even amongst bays, which are about the least liable to variegations."

How much or little climate has to do with the colours of horses it is very difficult to predicate at this age of the world; for, though we may be told that white or grey and chestnut predominate in Arabia, that black is most common in Russia, and that in England, France, and Germany bay is found to greatly outnumber any other, there is no telling how far fashion and consequent high prices may have spurred on enterprising breeders to the accomplishment of a triumph over the primordial tendencies of climate. We should be inclined to confine the colours of horses in this country to black, bay, brown, and chestnut. It is true that there are plenty of greys, but grey really belongs to the composite colours; and it is stated by an authority that "all grey horses come into the world chestnut, or more generally black." Greys, notwithstanding Grey Momus, are comparatively seldom seen, and more seldom still to advantage, on the racecourse, to which all questions relating to the excellence of horses must ultimately be referred. As for the white horses, which are such "pretty creatures" in the eyes of the nursery-governess and her young charges, it may be interesting to their admirers to learn that they are said to be, for the most part, grey horses whose hair is white with age. A white horse, born white, with the pink nose and the pinky eyes, is said to be as great a rarity in Europe as an albino; and there seems to be no good reason why art should be employed to make it increase and multiply. Of black horses, it will be remembered, the old Arab chief had not a very high opinion; and, though it might not be impossible to give a list of black horses which have distinguished themselves in England, and won undying fame in the *Racing Calendar*, that colour is most associated in one's mind with the

heavy household cavalry and the undertaker. Roan, a composite colour, is the name given to the appearance created by an intermixture of white, black, and bay or chestnut hairs, mingled in such different proportions that the coat may vary in shade from the darkness of Erebus to the lightness of what is commonly called strawberry. There lived good roan horses before Rapid Rhone, who ran third to Macaroni and Lord Clifden for the Derby, and how likely the colour is to be reproduced is shown by his own offspring; but there appears to be no great reason for encouraging a multiplication of what was, no doubt, originally as much an accident or freak of nature as the piebald. Of your piebalds, skewbalds, and the like it is scarcely desirable to maintain the breed, if they be capable of being reproduced at will, beyond the number sufficient for the parade, the esplanade, and the circus. It is desirable, however, to be clear as to what constitutes piebald: sappers of reputation, to whom nothing is sacred, have gone so far as to accuse such great creatures as a Stockwell or a Blair Athol of piebaldness because of certain "blazes" on the face or patches on the legs, or a couple of white stockings. Be it known to all such heretics that a chestnut, a bay, or a black, must have the white extending over parts of the body before the charge of piebaldness can be sustained.

ANTHRAX IN THE IMPERIAL HUNTING DISTRICT OF POTSDAM, PRUSSIA.

WITH regard to the serious destruction caused by the so-called "milzbrand," (Anthrax or Splenic apoplexy or fever,) among the deer in the imperial hunting district of Potsdam, Prussia, during the summer of 1874, and which was frequently alluded to by the public press of this country, Bollinger furnishes, in the *Deutsche Zeitschrift*, the following summary from a Vienna journal (*Jagdzeitung*, No. 20, 1874):

"In the summer of 1846 the disease prevailed so severely in various parts of the Potsdam district, in which the imperial forest is situated (at Grimnitz, Gross-Schönebeck, Reiersdorf, and Zehdenik), among the red and the fallow-deer, that 458 perished.

"In October 1861 the malady broke out in the park (3050 hectares in size) of Arnim-Boizenburg, and continued until January 1862, during which period many fallow-deer died.

"In the summer of 1873, from the 7th to the 28th of July, the disease prevailed among the fallow-deer in the park of Dubrow, forest district of Königs-Wusterhausen, after it had killed many cattle in the surrounding country; it is supposed that the deer received it from the cattle.

"All this loss, nevertheless, appeared insignificant, comparatively speaking, in the presence of that which was sustained in the course of the summer of 1874.

"The heaviest loss occurred in the Grunewald imperial park, which, on a surface of 4550 hectares, before the outbreak of the disease, contained 1800 head of fallow-deer (1300 adults and 500 young). On the 2nd of July the first animal which had succumbed to the malady was found, and on the following day seven others, and up to the evening of the 8th no fewer than 294 dead deer were discovered. From the 9th to the 12th of July, 531 were victims; so that in ten days—from the 2nd to the 12th—825 had been destroyed. From the 13th to the 17th, 234 other deer were lost, and after this date the mortality in Grunewald was as follows:

From July 18th	to 24th	. .	88 deaths.
„ „ 25th	„ 31st	. .	55 „
„ August 1	„ 10th	. .	17 „

"The total loss was 1219 deer (593 adult and young deer, and 427 fawns); many of the fawns died at a later period from starvation, through the loss of the does. It will thus be seen that of 1800 deer no fewer than 1219 died, or the enormous per-centage of sixty-nine of the original stock.

"At one time the abnormal state of the weather—a very great drought during the summer months—was believed to be the cause of the outbreak. What is most worthy of remark is the sudden and swift extension of the malady over a wide extent of territory.

"The long duration of the epizoöty in Grundewald was accounted for by the fact that sufficient care was not observed in disposing of the carcases of the dead animals when they were found, and removing them at once to a suitable place where they could be deeply interred; and the consequence was, that a number of deer which had died were stolen. The request of the managers for support was complied with, and troops were forthwith sent by the military to aid them. Then all the deer were moved; the eight red deer, which, with twelve fallow-deer, were kept closely confined in a separate part of the forest, as well as the whole of the fallow-deer. From the 12th of July the younger deer were more separated, and by means of the young grass and forest herbage which were accessible, they were saved.

"In the adjoining district and deer-parks, the following loss was sustained through the disease:

"In the small deer-park of Klein-Glienike, belonging to Prince Charles, the malady broke out in the first week of July; and up to the sixteenth day of that month, of 130 fallow-deer it had killed 102, or 78 per cent.

"In the forest district of Kunersdorf (consisting of 4430 hectares), in which were about 325 deer, the scourge appeared on the 10th of July, commencing sporadically; on the 18th, 205 animals had succumbed; and by the 22nd day of that month, when it ceased, 289 deer were returned as dead—a loss of 89 per cent., besides two hares. The roedeer were also exempted in this place; at least, not one dead creature of this kind was found. Although of the wild creatures boars suffered greatly, yet at a later period they escaped the malady. The same circumstance had been remarked in the Königs-Wusterhausen district in the previous year.

"In several of the private forests around the Kunersdorf district, 122 fallow-deer which had died from the disease were discovered.

"From these private forests it went to the great forest district of Lehnin, where in a herd of 60 fallow-deer, from the 16th of July to the 7th of August, 30 were lost—a mortality of 50 per cent. In other private forests in the vicinity of Klien-Glienike, 43 deer were reported as dead.

"In the Falkenhagen district, 7 fallow-deer and 2 roedeer perished from Anthrax. In the Potsdam-Bornim district, 32 more were found; and the total number of deer being only 50, this gives a loss of 64 per cent. Four roedeer and two hares also perished.

"In the deer-park of Pirsche-Haide (840 hectares), from the 9th to the 23rd of July, 108 animals (57 red and 51 fallow-deer), of 300 red and 64 fallow-deer, died.

"With regard to the symptoms of the disease, it was mentioned that three or four hours before death occurred, very frequently, though not always, the hair became rough-looking, and the creature was observed to drag itself listlessly along. Death ensued apparently from suffocation, and was sometimes ushered in with convulsions; at other times the animals died in perfect tranquillity.

"In the neighbourhood of the most severely affected districts there was a a tolerably large number of cattle, horses, and pigs affected with Anthrax through the stings of flies; a man lost his life through a fly-sting (*Fliegenstichen*). The horses, cattle, and pigs of the foresters likewise died.

"The total number of wild creatures which had perished and been found and buried, was 1952 red and fallow-deer, 6 roes, and 4 hares. It must also be remembered that, owing to the great extent of the plague-stricken districts, many straggling creatures must have died, and the most diligent search could not discover their whereabouts.

"The total per-centage of deaths among the deer amounted to 65; the original number being 2729, of which 1780 perished."

MEASUREMENTS OF THE RED CORPUSCLES OF THE BLOOD OF HIPPOPOTAMUS AMPHIBIUS, OTARIA JUBATA, AND TRICHECHUS ROSMARUS.

BY GEORGE GULLIVER, F.R.S.

(*Proceedings of the Zoological Society*).

HAVING on the 22nd July, 1874, procured some blood from the first two of these animals, and quickly thereafter made many careful measurements of the red corpuscles, I beg leave to submit a summary of the results, together with those concerning *Trichechus*, to the Society. Through the kind and judicious care of Mr. Bartlett and his son, and the skilful management of the keepers, no difficulty whatever was experienced in making a small puncture in the ear of the Hippopotamus and in the foot of the *Otaria*, from which in each case a drop of pure blood flowed, and was well collected, apparently without the animal being at all sensible of this very slight operation.

Hippopotamus amphibius, a female, reported to be twenty-one years of age. The average diameter of the red corpuscles proved to be $\frac{1}{3\,3\,3\,9}$ of an English inch. This is very slightly smaller than the same corpuscles of human blood, and somewhat larger than those of the Rhinoceros or of any other Pachyderm in which I have examined them, except the two elephants and the *Hyrax*. In the African Elephant Mandl discovered that the corpuscles are the largest known of Mammalia; and my observations soon afterwards proved that the Indian Elephant has also corpuscles of similar magnitude; and, as I discovered, they are of about the same size in *Myrmecophaga* and *Orycteropus* (Proc. Zool. Soc., Jan. 24, 1854, and Feb. 10, 1870). In these two Edentates the red corpuscles of the blood have a mean diameter of $\frac{1}{2\,7\,6\,9}$ of an inch, in the rhinoceros $\frac{1}{3\,7\,4\,5}$, in *Hyrax* $\frac{1}{3\,3\,5\,5}$. The exceptionally large size of the red blood-corpuscles of such a small species as *Hyrax* would be alone sufficient to indicate that it is not a regular member of the order pachydermata.

Otaria jubata, a female. The mean diameter of the red blood-corpuscles proved to be $\frac{1}{3\,0\,3\,3}$ of an inch; while those of man measure, on the average, $\frac{1}{3\,2\,5\,6}$. Thus in *Otaria* these corpuscles are larger than those of any of the Carnivora recorded in my tables appended to the Sydenham society's edition of Hewson's works. In all my then measurements of the corpuscles in this order those of *Phoca* proved the largest; and now the size is exceeded in *Otaria* and *Trichechus*. The smallest red blood-corpuscles in the carnivora occur in some species of *Viverra*, *Paradoxurus*, and *Herpestes*. But between several sections of this order there are curious irregularities in the differences of the size of these corpuscles, which, as our knowledge extends, will probably prove of physiological significance: meanwhile, I have already shown that they have taxonomic value; for example, by the comparative magnitude of the red blood-corpuscles alone the Canidæ may be easily distinguished from Viverridæ.

Trichechus rosmarus. This animal (the Morse or Walrus of popular books) has the red blood-corpuscles still larger than those of the Eared Seal. Some

years ago a young walrus arrived in a sickly state, and died soon afterwards, at the Society's menagerie, when I examined its blood and found it very rich in red blood-corpuscles, and consequently of high specific gravity. Referring to my notes, it appears that the mean of numerous measurements of the diameter of the corpucles was $\frac{1}{2700}$ of an inch, being exactly the same as the average diameter of the corresponding corpuscles of the two great Edentates already mentioned. And this conclusion is confirmed by recent measurements of the old specimens of the blood-corpuscles of *Trichechus;* they were so long since dried, and yet are still beautifully perfect. Thus of all apyrenæmatous red corpuscles, those of *Elephas, Myrmecophaga, Orycteropus,* and *Trichechus* are the largest at present known.

The red blood-corpuscles of man are among the largest of the mammalia. No British animal of this class has them so large; in all my former observations red corpuscles distinctly larger than of man were found only in six mammalia, to wit, *Myrmecopagha jubata, Orycteropus capensis, Bradypus didactylus, Elephas indicus, E. africanus,* and *Balæna boops.* To these must now be added *Trichechus rosmarus,* and *Otaria jubata.*

Structure and Form. The red blood-corpuscles of the Hippopotamus, *Otaria,* and *Trichechus* conform in structure and shape to the regular apyrenæmatous type. Nor among the mammalia has any indubitable exception to the apyrenæmatous character of these corpuscles yet been found.

Reviews.

THE PHYSIOLOGY OF THE CIRCULATION IN PLANTS, IN THE LOWER ANIMALS, AND IN MAN. By J. Bell Pettigrew, M.D., F.R.S., etc. London: Macmillan and Co.

A more original, interesting, exhaustive, or comprehensive treatise on the circulation and the circulatory apparatus in Plants, Animals, and Man, has never, we are certain, been offered for the acceptance of the anatomist, physiologist, or student of medicine, than that which Dr. Pettigrew has recently presented us with; and we have no easy task before us in attempting to do anything like justice to its merits in the limited space at our command. Notwithstanding this difficulty, we deem it to be no less a matter of duty to the author and the veterinary profession, than it is a source of pleasure to ourselves, to point out the more salient attributes of the work, and the high position it must hold in the estimation of those who take an interest in the progress of Comparative Anatomy and Physiology, among whom, we are assured, there are many veterinary surgeons. This work is, in reality, the substance of a course of lectures delivered before the Royal College of Surgeons of Edinburgh in 1872, in which a large number of excellent woodcuts have been substituted for the diagrams used on that occasion, and with great advantage. The important and complex questions involved in such a study as that of the circulation in the higher animals, can only be satisfactorily discussed by an appeal to comparative anatomy and physiology, and this appeal Dr. Pettigrew has made in a manner that has proved eminently successful and instructive in its results: those parts in the circulation

which appeared obscure in man, or the creatures nearest to him in organisation, being fully elucidated by comparing them with similar parts in the lower animals and in plants. He correctly states that "the heart, its nerves, blood-vessels, and valves, supply a theme of unusual interest not only to the anatomist and physiologist, but also to the practitioner, especially since the introduction of the stethoscope." To the veterinary surgeon, the anatomy and physiology of the circulation is a subject of the highest moment, when we consider their variation and importance in the economy of the many species of animals which he is supposed to maintain in health or minister to when diseased. The liability of the circulatory apparatus to functional and organic disturbance, particularly in the larger and more valuable animals, requires that the comparative pathologist should be thoroughly acquainted with the structure and mode

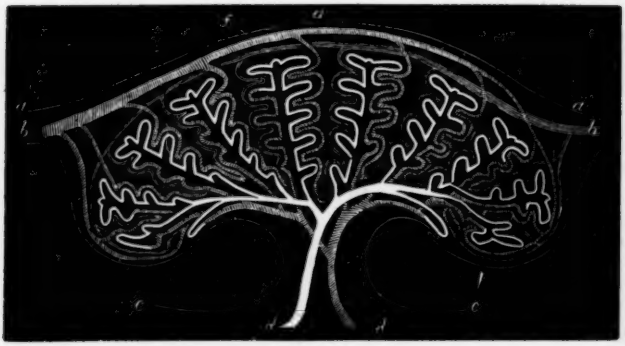

FIG. 5.

Cotyledon of a Cow's Uterus. *aa*, Surface of fœtal chorion. *bb*, Blood-vessels of fœtal chorion. *cc*, Surface of uterine mucous membrane. *dd*, Blood-vessels of uterine mucous membrane. *f*, Secretion from utricular glands (cotyledonous milk) placed between maternal and fœtal vessels, and which is necessary to the mutual interchange of gases, nutrient, effete, and other matters, between parent and offspring.

of action of this apparatus in health, in order to understand its condition in disease, and the influence any disturbance in its functions may have upon the other organs and tissues which depend upon it for nutriment and life.

A succinct notice is given of the history of the circulation, before and after Harvey—commencing with the Chinese, and terminating with Malpighi, who, in 1661, by the aid of the microscope, discovered the capillary circulation and the presence of blood-globules within the vessels. Then the circulation in plants and in the invertebrata is treated in a very lucid and philosophical manner, and in such a way as to lead by easy stages—easy enough for the comprehension of the junior student—to its consideration in the vertebrata. This, we must confess, is the most interesting portion of the work; as here we meet with striking evidence of original research of no mean kind—research which is particularly

interesting to veterinarians, inasmuch as it has been carried out to a large extent upon those animals which come under our care, and whose organization we are supposed to have more especially considered during our studentship. We note the fœtal circulation as very worthy of the attention of old and young in the profession, explaining, as it does, much that has been obscure and contradictory in the physiology of gestation. After pointing out that the researches of Professor Goodsir established the fact that the placenta not only performs the function of a lung, but also that of an intestinal tube, Dr. Pettigrew says:—

"Between the maternal and fœtal portions of the placenta there is a line of demarcation, well marked in the earlier stages of pregnancy, but blurred and confused in the later stages; partly because of the very intimate and accurate apposition of the two parts of the placenta, which in not a few instances gives rise to abnormal adhesions; and partly because of the serrated nature of the opposing surfaces, and the presence of certain secretions. The line referred to forms at once the natural line of junction and separation between the mother and fœtus, and in a perfectly healthy parturition the fœtal portion of the placenta parts from the maternal portion in such a manner as not to rupture or destroy to any extent the mucous lining and capillary vessels of the uterus of the mother. On the other hand, the mucous lining and villous tufts of the fœtal portion of the placenta likewise remain intact. This accounts for the fact that in the lower animals, and in a perfectly healthy human female, there is little if any hæmorrhage at parturition. The relation which the fœtus bears to the mother is that which the plant bears to the ground and the air; and that which the tissues of the adult animal bear to its alimentary canal and lungs, through which it obtains its nourishment and its breath. The capillary or villous tufts of the fœtal portion of the placenta represent the roots of the plant; the corresponding capillary tufts of the maternal portion of the placenta, the ground and atmosphere on which the plant subsists. The fœtus is in this sense to be regarded as a parasite, for it is a living thing living upon another living thing. This explains why a fœtus can take root and live upon other mucous surfaces than those supplied by the uterus—as, for example, those of the Fallopian tube; and I can quite understand that the fœtus would thrive on certain portions of the mucous lining of the alimentary canal, if we could only succeed in making a natural transference."

The circulation in the placenta is carefully detailed, and its analogies in the plant and the tissues of the body pointed out, the object of the remarks being to show that the placental circulation of mammals is substantially the same as that occurring in these.

"The internal surface of the ovum (apparently its external one) is applied to the internal or mucous surface of the uterus; but the internal surfaces of mother and fœtus are similarly constituted and perform analogous functions, the two coming together and blending as naturally as the fingers of the hands pass through and fit into each other. After a certain interval, processes equivalent to roots and spongioles are sent out from the internal surface of the fœtus (*chorion*); similar processes, which naturally exist in the uterine mucous membrane of the mother, become

hypertrophied and exhibit a greatly increased activity. These processes of the mother and fœtus are at first distinct, a certain interval separating the two. Gradually, however, they approach and interweave until they are accurately adapted to each other; the fœtus being, as it were, grafted on the mother. Notwithstanding this very intimate relation, the fœtus and mother are essentially distinct. The fœtus is in some senses out of, or beyond, the mother from the first. The arrangement is of a purely temporary character. The internal surface of the fœtus, or that part of it which constitutes the fœtal placental area, is quite distinct from the

FIG. 6. FIG. 7.

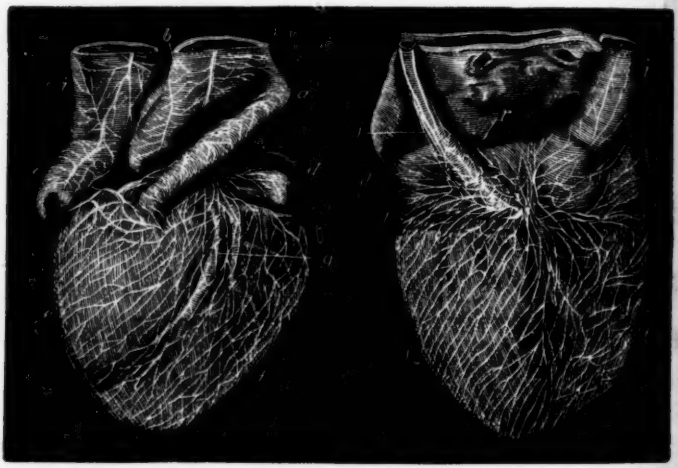

FIG. 6.—Nerves and Ganglia on Anterior Surface of Calf's Heart. *a b*, Pulmonary artery and aorta, with nerve-plexuses and ganglia. *i*, Descending cava, with nerve-plexus and ganglia. *c*, Right auricle. *d*, Left auricle. *e*, Nerves and ganglia distributed on right side of heart. *f*, *Ditto* on left side. *g*, Anterior coronary vessels covered with nerve-plexuses and ganglia.

FIG. 7.—Nerves and Ganglia on Posterior Surface of Calf's Heart. *i*, Descending cava. *c*, Nerves and ganglia on right auricle. *d*, *Ditto* on left. *e*, Nerves and ganglia on right ventricle. *f*, *Ditto* on left. *j*, Great nerve-plexus and ganglia covering coronary sinus (*r*), and extending itself on the right (*h*), left (*l*), and posterior coronary vessels, and the right (*e*) and left (*f*) ventricles generally. The ganglia in this case are very numerous, particularly on the coronary sinus (*r*).

corresponding internal surface or mucous lining of the uterus which constitutes the maternal placental area. In the ruminants this relation is very well seen, the villous tufts which represent the fœtal portion of the cotyledon being torn out of corresponding tufts in the mucous lining, representing the maternal portion of the cotyledon, without rupturing the vessels, and in such a manner as to occasion no bleeding whatever.

This arises from the fact that the capillary vessels of the fœtus and mother are simply laid against each other, *i.e.*, placed in juxtaposition: the two sets of vessels and the mucous linings investing them remaining essentially distinct. With a view to a natural and easy separation, the maternal and fœtal tufts in ruminants are arranged in wedge-shaped masses, the apices of the wedge-shaped capillary masses of the fœtus dovetailing into the capillary wedge-shaped masses of the mother—an arrangement which admits of very easy extraction. The extraction is further facilitated by the presence of cotyledonous milk between the tufts."

Dr. Pettigrew differs from Reid, Goodsir, Ecker, and others, with regard to the relations between the material uterine vessels and the fœtal placental villi in the human species, and offers good reasons for his opinion being the correct one. He also disagrees to some extent with Count Ercolani, veterinary professor at the University of Bologna, with regard to the manner in which the fœtus is nourished and respires, and we are sorry that we cannot afford sufficient space to give his own views, which we conceive to be pretty well established.

The section on the distribution and anatomy of the great vessels in reptiles, birds, and mammals, and the structure and physiology of the heart in these, is full of interest and originality. The structure of the heart of the mammal, and the arrangement of the muscular fibres in the auricles and ventricles, are particularly worthy of attention. Dr. Pettigrew appears to have been fortunate in discovering a method whereby the arrangement of the muscular fibres of the heart could be demonstrated—a discovery of some value, when we remember that this arrangement is so unusual and intricate as to have baffled Vesalius, Albinus, Haller, De Blainville, and others, to make it out.

The physiology of the heart, and the description of its ganglia and nerves, and their connexion with the cerebro-spinal and sympathetic systems, possess a fascination which is all but irresistible in the way of quotation.

Dr. Pettigrew's cardiac nerve dissections, which are deposited in the Anatomical Museum of the Edinburgh University, numbered no fewer than fifty, and embraced specimens of the cardiac nerves of man, horse, calf, sheep, cat, rabbit, etc. He found that, in the lower animals, the relations of the pneumogastric and sympathetic nerves are less complicated than in man, and that while the branches supplied by the former are tolerably constant, those furnished by the ganglia of the sympathetic, as well as the ganglia themselves, vary. The number of nerves found on the surface and in the substance of the calf's heart is greater than in any heart Dr. Pettigrew examined—a circumstance which induced him to select it for description and illustration. Their number and complexity are beautifully shown in the annexed cuts. The plexus formed on the coronary sinus is composed almost exclusively of branches from the second and third dorsal ganglia of the sympathetic on the left side. The cut illustrating this, as well as other plexuses and nerves, is given below, and is the only one we can now afford to introduce in our far too brief and insufficient review.

We cannot notice the microscopic appearances presented by the ganglia of these nerves, nor the explanation of the rhythmical action of the heart itself. We can only refer those of our readers who may desire a real intellectual treat, to the work itself for every particular connected with the subject which it embraces. We know of no treatise on physi-

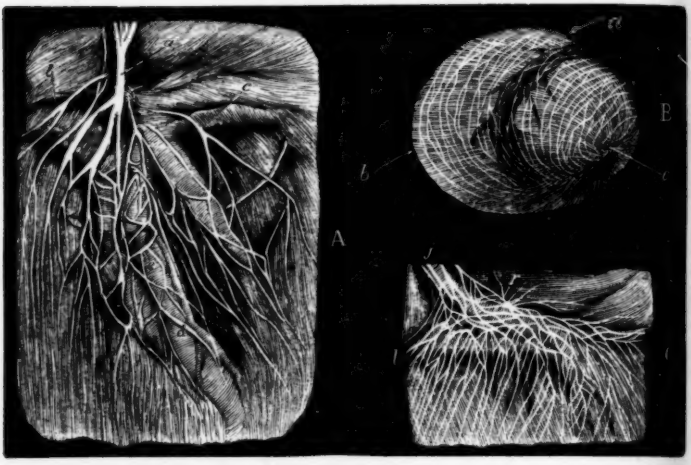

FIG. 8.

A, Nerves and Ganglia on Horse's Heart. *a*, Large quadrangular ganglion, communicating with five branches. Three of these branches form ampullæ or spindle-shaped swellings, where they cross the coronary artery. Similar swellings are observed where the nerves cross the vessels occupying the anterior ventricular groove (*d*, *e*). B, Apex of Left Ventricle of Calf's Heart, showing that the muscular fibres of the ventricle pursue a spiral direction from left to right downwards (*b*); the nerves pursuing a spiral direction from right to left downwards (*a*), and always crossing the muscular fibres at nearly right-angles. Several ganglia are seen on the nerves as they approach the apex (*c*). C, Nerve-plexus and Ganglia on coronary sinus (*j*) and base of left ventricle (*l*) of Calf's Heart. The ganglia (*r*) in this situation are for the most part quadrangular and triangular in shape, and stand boldly out. They consist of a superficial and a deep set.

ology which offers a greater inducement to, or is more worthy of study, than Dr. Pettigrew's monograph. It is a really valuable contribution ot anatomical and biological science, and is as interesting and instructive to the youngest as the oldest student.

Abstract of the Proceedings of the Royal College of Veterinary Surgeons, Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 5TH, 1876.

Present—The President; Professors Brown, Simonds, Axe; Messrs. Dray, Greaves, Withers, Lawson, Cartwright, Moore, Field, Balls, Moon, Mayer, Lepper, Woodger, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of the last two special meetings were read and confirmed.

Correspondence.

A letter was read from Mr. Fleming, regretting his inability to attend the meeting.

The Secretary stated that copies of the Supplementary Charter had been sent to the Principals of the London, the Edinburgh, the New Edinburgh, and Glasgow Veterinary Schools, the Professors of the College, the Highland and Agricultural Society, the President of the Royal Veterinary College, the Chairman of the General Purposes Committee, C. N. Newdegate, Esq., M.P., and the members of Council.

Letters were received from Messrs. Newdegate, Whatman, Menzies, and Professor McCall, acknowledging the receipt of copies of the Charter.

A letter was received from Mr. Jenkins, of the Royal Agricultural Society, acknowledging the receipt of the decision of the Council of the Royal College of Veterinary Surgeons to be submitted to the Veterinary Committee on Tuesday, the 7th, and asking for a copy of the Charter and Bye-laws. These were sent.

Another letter was also received from Mr. Jenkins, dated 10th December, saying that the Committee would be glad to confer with the Special Committee of the Royal College of Veterinary Surgeons with reference to the prize or scholarship for the pupil who should pass the best examination in each year, and suggesting the first of February as the time of meeting.

It was agreed that the Conference should take place on the last-mentioned date.

A letter from Mr. Hunt, of Edgbaston, enclosing a prospectus of the Ontario Veterinary College, established ten years ago.

A letter from Mr. Kimpton, bookseller, High Holborn, in which he stated that a Veterinary School was about to be established in Chicago, United States, and asking for a list of the members of the Royal College of Veterinary Surgeons, and also for a copy of the old diploma with an impression of Mr. Coleman, or a blank diploma of the present time.

The Secretary did not comply with the request, but called upon Mr. Kimpton, in order to ascertain the name of the applicant for the diploma. This it appears, is a Mr. Courtenay, whose name had been recently before the Council as falsely representing himself to be a member of the Royal College of Veterinary Surgeons.

Letters were received from the Principal of the Royal Veterinary College and the Members of the Court of Examiners in London, approving the arrangements for carrying out the examinations.

Pass Examinations.

At the meetings of the Court of Examiners for the "Pass Examinations," held on the 16th, 17th, and 18th December, 1875, ten passed and fourteen were rejected.

First Examination.

At a meeting of the Court of Examiners, held on the 20th December, 1875, six students passed and two were rejected.

On the 21st, six passed and three were rejected.

On the 22nd, five passed and one was rejected.

On the 23rd, four passed and one was rejected: making a total of twenty-one who passed and eight who were rejected.

Examinations in Scotland.

A letter was read from Dr. Dunsmure, enclosing statement of the Examinations in Scotland, from which it appeared that at a meeting of the Scotch section of the Court of Examiners, held at Edinburgh on the 23rd of December, 1875, from the Edinburgh Veterinary College one student passed his examination, and two were rejected; from the New Veterinary College, one passed; and from the Glasgow Veterinary College, one passed, and one (a second examination) was rejected.

From a statement of the expenses incurred in these examinations, it appeared that the expenditure was £39 7s. 8d., and the receipts were £6 6s., leaving a balance of £33 1s. 8d. due to the Hon. Secretary.

The obituary notice was read.

College Fund.

The report of the Committee stated that since the last meeting the amount of subscriptions received was £11 11s., and after deducting the expenses incurred by advertising, there was a balance left at the bankers of £101 4s. 7d.

On the motion of Mr. Dray, seconded by Mr. Balls, the report was received and adopted.

Finance Committee.

The report and Treasurer's balance-sheet showed that the present liabilities amounted to £143 19s. 1d., which the Committee recommended should be discharged. This would leave a balance at the banker's amounting to £247 13s. 9d.

It was moved by Mr. Dray, seconded by Mr. Moore, and resolved, that the report and accounts be received and adopted.

Cheques were ordered to be drawn for the current expenses.

Statement by Professor Simonds.

In answer to Professor Simonds,

The President stated that the committee appointed to take into consideration the terms on which foreign students would be admitted to examination had not, as according to notice sent to Professor Simonds and the other members, met that afternoon, as there was no quorum.

Professor Simonds said that that would then be a good opportunity for him to set himself right with the Council and the outside public. He had read, with great astonishment, the report of the proceedings of the Council on the last occasion when it met. He was present for a certain length of time, but he left before the report of the Committee was brought up; and before it was dealt with in what appeared to him to be a most extraordinary manner. The report was received, and subsequently one of the members of the Council moved its adoption, but the President very rightly held that the report could

not be adopted, because that course would necessitate the alteration of a bye-law, and that the Council was not then in a position to alter its bye-laws, and therefore not in a position to adopt the report. Upon that, it appeared that two of the members of the Committee rose, and said that they were not satisfied with their own report, and the consequence was that the report was sent back to the Committee to be amended. The ground of these gentlemen's objection appeared to be that they did not agree with their own report in as far as it did not satisfy them as to how a member of the College of Surgeons was to be dealt with, presuming he became a student at any one of the veterinary colleges. This matter had been very freely and fully discussed in Committee ; and although there was a difference of opinion among the members at the time, they were evidently unanimous in bringing up their report. Now, as the report had been sent back to the Committee for amendment on that one point, it was very evident that some alteration would be made which might place him in a very awkward position ; and foreseeing that a good deal of trouble and difficulty were looming in the distance, he begged leave to tender his resignation as a member of the committee.

The President asked Professor Simonds if it would not be the better course to argue the point with the Committee rather than to resign. He himself agreed with him on the subject, and they would simply be left in a minority.

Professor Simonds said he could not afford to be in a minority on such a subject. He could not afford to tell a medical man who had obtained a diploma of the Royal College of Surgeons that he was to be put upon a level with a boy who came from school, sixteen or seventeen years of age, and that he was to be at the College for two years, and not have any privilege at all before he was entitled to be examined. It would be unfair that he should have no credit for any knowledge he possessed of visceral anatomy, and that he should be placed entirely on a level with, it might be, a schoolboy, or perhaps with the son of a farrier or veterinary surgeon, who knew nothing whatever about his profession until he went to the College. He would never be a party to throw such a report in the teeth of the medical profession.

Professor Simonds's resignation having been accepted,

It was resolved, on the motion of Professor Brown, seconded by Mr. Moore, that Mr. Mayer be elected in his stead.

The Secretary announced that Dr. Voelcker had presented two pamphlets, one on "The Composition of Phosphatic Minerals used for Agricultural Purposes," and the other on "Root Crops, as affected by Soil, Manure, and Climate."

It was moved by Mr. Dray, seconded by Mr. Mayer, and resolved, "That a vote of thanks be given to Dr. Voelcker for his presentation."

Supplementary Charter.

The Council then proceeded to reconsider the clauses of the proposed Supplementary Charter.

On the consideration of Clause 4, which recites the conditions of admission to Fellowship,

Mr. Dray said he was of opinion that when a student had obtained his diploma and had been in practice for five years, he would be very reluctant to recommence study and to present himself for another examination to obtain his Fellowship. He did not wish altogether to move the rejection of the clause, but at the same time he thought it would be very inoperative.

Mr. Moore thought the clause might tend to discourage some to come up for a Fellowship, but not all.

Professor Axe thought the charter would be entirely useless unless it placed before the members of the profession an incentive to a higher examination

and the obtainment of the degree. The object of the charter was really to raise the status of the profession, and unless that object were attained it seemed to him it would be entirely worthless.

Mr. Moore asked what other degree the Council proposed to confer over and above a Fellowship.

The President said there was no other degree.

Mr. Moore.—Then, according to what Mr. Dray says, that clause is a dead letter.

The President.—It does not follow that Mr. Dray is right. I think with Mr. Axe that it will encourage a great many men to come forward. If the worst comes to the worst it will be a dead letter, but my own impression is it will not be.

The clause was then allowed to stand as it was.

On Clause 6, which relates to the admission fee of a Fellow,

Mr. Dray thought that the maximum fee of ten guineas on admission, and of fifteen guineas on election, would be a further obstacle in the way of gentlemen presenting themselves for examination a second time.

Mr. Greaves was of the same opinion, and thought that the fees should be reduced. A man must be very ambitious indeed before he would pay such a sum over and above that paid for his diploma.

Professor Axe said it was the very ambitious men that were required. It would be far preferable to have one ambitious man than to have a number whose ambition was very evanescent. The amount was not to exceed ten or fifteen guineas, and it would be in the option of the Council to fix whatever amount they pleased.

The clause was ultimately allowed to remain unaltered.

On the consideration of Clause 10, which provides that no member not a Fellow shall be eligible as a member of Council or to serve on the Board of Examiners,

Mr. Greaves said that he thought the time had arrived when the Board of Examiners should consist of veterinary surgeons only. He thought that, with some study and attention. men of their own profession could be found who would be competent to fulfil the duties at the different tables.

The President having expressed his opinion that the Council had it in their option to appoint examiners either in or out of the profession,

The clause was allowed to remain as it stood.

Mr. Greaves said he was entirely in favour of Clause 11, which authorised members to give their votes at the Annual General Meeting by means of voting papers, in the event of their residence exceeding five miles from the place where the Annual General Meeting shall for the time being be held. He would, however, go still farther, and be glad to see voting by proxy a rule of the Council, on the ground principally of the inconvenience experienced by the Scotch members in attending the meetings. He should therefore propose that a clause should be inserted to the effect "That members have the power to appoint proxies to vote on their behalf at the meetings of the Council."

Mr. Lawson seconded the motion, which was, however lost.

Clause 12 provides that every third Annual Meeting, dating from the next Annual General Meeting, may be held at Edinburgh.

Mr. Dray moved, as an amendment, that that part of the clause should be erased, on the ground that it would be prejudicial to the interests of the Council that it should be migratory.

Mr. Balls seconded the motion.

Mr. Greaves could not see that there could be any substantial or sound argument advanced against the proposition to hold every third Annual Meeting in Edinburgh. He thought it was a proper thing to do, and the

Council in doing it would only be acting in a conciliatory manner to the Scotch schools, which were deserving of some consideration, because in Scotland there were three veterinary schools, while in England there was only one.

It was proposed by Mr. Field, as a second amendment, that the words "or Dublin" be added to the clause as it stood, as there might be, at some future time, a veterinary school in Dublin.

Mr. Cartwright seconded the proposition.

On the two amendments being put,

Mr. Dray's amendment was lost, and Mr. Field's amendment was carried by a large majority.

On the consideration of Clause 13, which provides for the removal of members from the university,

Mr. Mayer suggested that some words should be inserted defining the misconduct on account of which members would be dismissed.

The President then moved, and Mr. Mayer seconded, "That the Parliamentary Agent be instructed to insert some words defining the nature of the offence."

The resolution was carried.

Clause 14 was next considered. It provides for the punishment of persons assuming the title of veterinary surgeon without due qualification.

Mr. Greaves thought that the proposed clause would give more satisfaction to the country generally than any one of the clauses; but the question was, Could the Council legally enforce the penalty stated?

Mr. Hunt thought the Society was not in a position to adopt the proposed clause.

The President stated he had recently been to Scotland, and had sounded the feeling of the Scotch people and the Secretary of the Highland and Agricultural Society on the prohibitory clause, and found that it was very much against its being inserted. If it were pressed, it might cause opposition to the Charter on the part of the Scotch schools, which was undesirable. He thought that, even if the clause were inserted, it could not be practically enforced. It would no doubt be a disappointment to the profession if the clause were not inserted, but his own opinion was that it would be better not to attempt to enforce it.

Mr. Moore thought that the clause was the most important one in the Charter, and that it ought to be inserted.

After some further discussion, it was resolved that the clause be omitted.

On the suggestion of Mr. Mayer, it was resolved to ask the Parliamentary Agent whether or not such a clause was necessary.

After the proposed Charter had been fully considered,

The President moved, "That the Charter Committee be authorized to take the steps necessary to obtain the Supplementary Charter, with such alterations as have been suggested."

Mr. Greaves seconded the motion, which was carried.

The names of Mr. Gowing and Mr. Mayer were added to the Committee.

Extension of the Course of Study.

The President moved, "That it is desirable to take such steps as may be considered necessary to extend the course of study for veterinary students to a period of not less than three years.

Professor Simonds seconded the resolution.

Mr. Greaves, while entirely in favour of the extended curriculum to three winter sessions, thought that the students who had served three or four years to a veterinary surgeon should terminate their studies at the second winter course.

The President thought that that was more a question of instruction for the Committee.

The President moved, "That a Committee, consisting of Messrs. Field, Fleming, Harpley, Mayer, and Dray, be appointed to consider the question, and report to the Council."

Mr. Dray seconded the motion, which was carried.

Mr. Greaves then moved, "That the Committee be desired to take into consideration the advisability of allowing a certain period of practice with a veterinary surgeon to count as, or in lieu of, school time."

The motion was seconded and carried, and the business of the meeting was concluded.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE ordinary general meeting was held at 10, Red Lion Square, London, Thursday, Jan. 6th, at seven p.m., the President occupying the chair. Mr. Thomas Moore, M.R.C.V.S., was proposed as a Fellow, and will be ballotted for at the next meeting.

Mr. Alfred Broad said that having noticed in the *Veterinary Journal* a communication from Professor Walley, respecting dilatation and stricture of the bowel of the dog, he was induced to bring to the meeting a specimen of a similar case that occurred about four years ago in a fox-terrier, aged nine months. This animal being the subject of Distemper, and improving under treatment, had relapsed and succumbed; and though it had shown no symptoms of enteric disease, the *post-mortem* examination proved the existence of a constriction of the commencing portion of the rectum, which was of a brick-red colour, with dilatation of the colon, the mesentery also being diseased. The discussion thereon was mainly as to whether the muscular coat was hypertrophied, and the other tunics thickened.

Professor Axe remarked, that from a casual examination of the specimen as it appeared in the jar, the question occurred to him as to whether the dilatation of the gut was the effect of a stricture, or of hypertrophy of its muscular layer. With reference to the Distemper from which the dog suffered prior to death, he was not disposed to regard it as the cause of the intestinal lesion.

At the solicitation of the President, Professor Axe undertook to examine the specimen, and to report upon it to the Society at the next monthly meeting.

The President then introduced a calculous deposit from Stenon's duct, and which had been situated near the second and third molars. This was a very interesting and unusual specimen, its existence being unknown during life, and was only discovered casually by passing the hand over the part. The animal had died from Enteritis. He thought three points in this case should be considered :—1. The causes producing such an accumulation. 2. Its composition. 3. Its consequences, and best measures for removal. As somewhat illustrative, he related a case of a carriage-horse having a wound at the side of the jaw, which was continually discharging a clear and limpid fluid. This condition had existed for ten or twelve days; and believing there was an opening into the parotid duct, he laid over it cotton wool dipped in collodion, which, when dry, was added to, one layer over another, till a thick covering was made. This retained the discharge; and remaining on for thirteen or fourteen days, was effectual in stopping it.

Professor Axe considered that the value of such cases would be materially enhanced by a complete history of the horses to which they referred. Any attempt to determine the origin of such formations must embrace a full con-

sideration of the habits, mode of life, and ailments of the animal. In reply to the President, he was of opinion that defective assimilation most likely gave origin to the conditions under which such substances were developed, and that any mechanical obstruction to the passage of the saliva would favour concretion. The obstinacy of fistula of the parotid duct he considered was mainly due to induration of the edges of the wound, and their adhesion to surrounding tissues.

The President doubted whether there might not be some fault in the duct itself to account for the nucleus being formed in the one canal only.

Mr. Burrell thought it just possible that some particle of matter had got into the duct, by the mouth, and so formed a nucleus for the calculus.

Mr. Woodger, jun., did not consider there was much necessity for its removal during life. In a case of Strangles, in which the duct had been opened, he advised the use of chalk or lime. This was used, and recovery followed.

The President then brought forward a portion of the cervical spinal cord of a cow that had died from an attack of Parturient Apoplexy. The theca of the cord had been opened, to show the medulla, with extravasated blood upon it; the brain also was found highly congested. The animal was a well-bred, short-horn Alderney. The President then briefly adverted to the disease known as Parturient Apoplexy, which he had found in his practice chiefly affected shorthorns and high-bred animals, especially good milkers and plethoric animals; though the coarser kinds were not exempt. The primary symptoms often passed unnoticed by the cowherd till the condition of the animal attracted attention. Then there was witnessed a wild, staring aspect; great disinclination to move; quickening pulse and increased heat of the body; succeeded by staggering about and falling, with inability to rise; or, if able to rise, falling again. This occurs generally between twelve and twenty-four hours after calving. The eyes become glassy and insensible to the touch, and the pupils are much dilated. In the early stage, the animal may be bled copiously, if the pulse indicates it; and a full aperient should be given and repeated if necessary. The latter may consist of Epsom salts 1 lb., sulphur ½ lb., ol. croton 10 m., calomel 3i., ginger, etc., in three quarts of warm ale. If insensibility has taken place, phlebotomy is not called for. The medicine is best given by the stomach pump; the frequent use of the catheter is also advisable; also the application of a strong liniment over the spine; following these up with stimulants, such as aromatic spts. ammonia in cold ale: the animal being comfortably placed, and the teats frequently "stripped" out. Should tympanitis of the rumen be present, the probang should be used, and pressure on the flank resorted to, as muscular contraction is feeble. To neutralize the gas, 3ii. chloride of lime may be mixed with water, and given by the pump. During amendment, the animal might have from time to time good gruel, with carminatives and whiskey.

In conclusion, the President alluded to *prolapsus vaginæ*, which occurs in stall-fed cattle, from the weight of the calf and contents of the stomach operating injuriously. For this condition he generally advises "quartering" the hind extremities with a piece of wood, four inches high, behind the cow; and lowering of the stall and bed in front. This is generally sufficient until the time for calving; but if not, the harness truss he designed might be used.

There was no discussion, owing to the lateness of the hour; the subject was therefore adjourned till the next meeting.

Present ten Fellows and one visitor.

JAMES ROWE, JUN., *Hon. Sec.*

ONTARIO VETERINARY MEDICAL ASSOCIATION.

THE Annual Meeting of this Association was held on December 22nd, in the Lecture Room of the Veterinary College, Toronto, and was well attended by members from all parts of Canada. Professor Smith, V.S., the President of the Association, occupied the chair, and in his opening address congratulated the members on the general advancement of the veterinary profession, and also stated that they must endeavour to encourage unanimity and good fellowship amongst its members, and to raise their profession to its proper status, which could only be done by their individual and united endeavours to keep pace with the advancement of collateral sciences by being earnest students, although long from school or college, and thus prove their superiority over the charlatan or impostor. They had ample opportunities of improving themselves, even in their daily practice, by watching closely the teachings of nature, as well as of art; and although veterinary literature has not yet attained to the same perfection as the literature of the sister profession, yet they had many valuable works—as Percivall's writings, and of late years those of Fleming and Williams. During the past summer the *Veterinary Journal*, an excellent monthly periodical ably edited by George Fleming, Veterinary Surgeon to the Royal Engineers, had been brought out. The President strongly recommended the perusal of the *Veterinary Journal* to the members of the Association.

After the usual routine business was over, the subject of a tariff was taken up and fully discussed, and also other matters of importance to the profession.

The election of office-bearers was then proceeded with, and resulted as follows:—President, Professor Andrew Smith, V.S., Principal of the Ontario Veterinary College, Toronto; Vice-President, E. T. Hagyard, V.S., Brampton; second Vice-President, J. Wilson, V.S., London; Treasurer, W. Cowan, V.S., Galt; Secretary, C. H. Sweetapple, V.S., Brooklyn; Directors, C. Elliott, V.S., St. Catharine's; J. T. Duncan, V.S., Goderich; R. Robinson, V.S., Tullamore; A. O. F. Coleman, V.S., Ottawa; J. Bond, V.S., Toronto; T. Lloyd, V.S., Newmarket; E. A. A. Grange, V.S., Guelph; J. S. Cæsar, V.S., Port Hope.

A very interesting paper by Mr. Wilson, of London, was then read on the disease of the respiratory organs of the horse; and Mr. Cowan, V.S., Galt, also read an excellent paper on Œdema in the Horse, and his very successful mode of treatment.

Mr. Cæsar, of Port Hope, then gave to the meeting an admirable account of treating fractures by means of the plaster of Paris or plastic bandage.

Mr. Anderson, Elora, spoke of the successful treatment of a case of "Bog-spavin" by the use of the aspirator, and followed up by compression.

These papers were the means of eliciting a highly instructive discussion.

The President made a few remarks on the similarity of some of the symptoms of Purpura to those of Glanders.

Drs. Thorburn and Barrett were elected honorary members of the Association.

It was agreed that the next regular meeting of the Association be held in the city of Hamilton.

The thanks of the meeting were then voted to these gentlemen for their interesting addresses, and the meeting adjourned.

Jurisprudence.

IMPORTANT HORSE CASE.

A SOMEWHAT important horse case, which occupied the attention of the law courts in the west of Scotland, has been recently concluded. We have refrained from noticing it until now, from the great extent of the evidence, and the extraordinary length to which the lawyers had carried their arguments; as well as from the fact that the case was to be moved to a higher tribunal, and was therefore undecided. The dispute was as to the *soundness* of a horse; the pursuers being an influential number of gentlemen composing the Argyll and Bute District Board of Lunacy, and the defender a horse-dealer who sold the animal to the Board. We will quote the report of the final decision, as it is given in the *Paisley Gazette* for December 18th.

"In April last, this action was raised in the Paisley Sheriff Court, before Sheriff Cowan. The Argyll Board sought repayment of £90, being the price of a mare purchased by the pursuers from the defender on the 10th of February last, and shortly thereafter paid for. The mare was bought on the guarantee that she was sound and was a good worker; but the pursuers alleged that at the date of the warranty she was not sound, and was not a good worker, being affected with Bog-spavin. Seven witnesses were examined for the pursuers and thirty-one for the defender; and on 3rd August Sheriff Cowan gave decree in terms of the conclusions of the summons. The defender appealed the case to the Sheriff-Principal (Fraser). We reported at the time the debate before his Lordship, who has just issued the following interlocutor, with note, reversing the decision of his Substitute, and allowing the defender expenses:—

"Edinburgh, 11th December, 1875.—The Sheriff, having considered this process, sustains the appeal for the defender; recalls the interlocutor appealed against: Finds that the pursuers, on tenth February, eighteen hundred and seventy-five, purchased from the defender, at the price of ninety pounds, a Clydesdale mare, which the defender warranted to be sound and a good worker, and that said mare was delivered to the pursuers' manager on twelfth February following: Finds that the pursuers have not proved that at the date of sale the said mare was not sound and not a good worker: Therefore assoilzies the defender from the conclusions of the summons and decerns: Grants warrant to the Clerk of Court, to pay over the consigned money to the pursuers: Finds the defender entitled to expenses: Allows him to give in an account thereof, and remits the same when lodged to the Auditor of Court to tax and report.

"(Signed) PATRICK FRASER.

"*Note.*—The evidence here, as is usual in all cases as to the soundness or unsoundness of a horse, is very contradictory. The most positive opinions are given upon opposite sides, and even persons who are brought to speak, not to matters of opinion but to matters of fact passing before their own eyes, give different accounts of the same thing. It is very difficult to pronounce judgment upon a case of this sort, where the Court is of opinion that every one of the witnesses is a credible witness, endeavouring to tell the truth to the best of his ability or knowledge.

"The mare is said to have been ill from Bog-spavin at the date of the sale, and Bog-spavin is unsoundness in law (see Oliphant on the Law of Horses, p. 72). If the animal was labouring under this disease at the time of sale, then the pursuers are entitled to be relieved from their bargain, because they bought under warranty from the defender in these terms, 'I hereby guarantee the same sound and a good worker.'

"The sale to the pursuers' manager took place on the 10th February, 1875, and between that date and the 26th February, the mare was wrought for a half-day now and then, but not continuously. On the 26th she was at a ploughing match on the farm of Auchendarroch,—taken there by the pursuers' manager; and after being engaged ploughing for two hours she (according to the evidence for the pursuers) became lame, which lameness the witnesses for the defender did not see, and which lameness the witnesses for the pursuers say was caused by the disease of Bog-spavin. The mare was immediately rejected by the pursuers' manager, and the rejection not having been acquiesced in, the present action is the result.

"On the one hand, there are four veterinary surgeons who are of opinion that the animal was labouring under Bog-spavin: viz. (1) Robert Mitchell, Anderston, Glasgow, whose certificate is dated 8th March, 1875, who finds 'said mare lame on both hind legs, arising from Bog-spavin,' and which, in his opinion, existed previous to the sale. (2) William Williams, Principal Professor of the New Veterinary College, Edinburgh, whose certificate is dated 2nd April, 1875, and who found 'said mare lame in the near left side hock, and that both hocks are enlarged, unsound, and imperfect in action.' In his examination, he says that 'it is difficult, as matter of opinion, to say positively that it existed for two months previous to my examination.' Alexander Robinson, a veterinary surgeon in Greenock, examined the mare on 23rd April, 1875, and found 'said mare unsound from Bog-spavin in both hocks.' Finally, Daniel M'Lean, a veterinary surgeon in Glasgow, examined the mare on 9th June, 1875. 'I found,' says he, 'she had Bog-spavin in the off hock. There was also a slight distension of the near hock, indicating the presence in that hock also of the same disease.' But he could give no opinion as to how long the animal had been suffering from it.

Now, if the evidence had been left there, it would have been an easy task to pronounce judgment; but these very distinct opinions are contradicted in the most explicit terms by persons of the same profession, and equally skilled in the art which they practise. First, there is a certificate from James M'Call, Principal of the Glasgow Veterinary College, dated 17th March, 1875, setting forth that he had that day examined the mare, and was 'of opinion that the said mare was sound.' But this was not the first examination which Mr. M'Call made. He had himself examined her and bought her on the 3rd of February, 1875, as a sound animal, before the sale to the pursuers; and he took her as a sound animal, paying therefor the sum of £86. He resold her to the defender, for a reason to be immediately referred to; but all this certainly indicates what his opinion of her was on the 3rd of February, nine days before the sale to the pursuers, when he bought her as a sound animal, and paid for her a full price. The next professional evidence in point of date, is on the 30th of April, 1875, from William Fordie, Lecturer on Anatomy and Physiology in Glasgow, who found her 'to be sound.' To the same effect is the evidence of Robert Mitchell, veterinary surgeon, Carrick Street, Glasgow, who examined the mare on 21st June, 1875; of Alexander Gray, veterinary surgeon, Edinburgh, of same date; of David Allan, veterinary surgeon, Glasgow, of same date; of Alexander Pottie, veterinary surgeon, Paisley, of same date. Thomas Walley, Principal and Professor of Anatomy and Cattle Pathology in the Edinburgh Veterinary College, made two examinations of the mare—the one on the 30th of April, 1875, at Ardrishaig, and the second on 2nd July, 1875, at Glasgow—and he gives a detailed certificate, the result being that he considered the animal to be sound.

"It is quite impossible to reconcile these opinions, or to explain any one of them away, by suggesting that some of the witnesses had not taken sufficient pains in making their examination or sufficient time to enable them to do it.

Principal Williams was only occupied four minutes in his examination, but four minutes would be perfectly sufficient to a person so skilled, to enable him to form his opinion upon such a matter; and the Sheriff, therefore, lays no stress whatever upon such criticisms as detracting from the value of any one of these professional opinions. It is difficult, however, to come to the conclusion that the pursuers, upon whom lies the *onus* of proof, have discharged that *onus* sufficiently when there are opposed to the four skilled experts whom they adduce, seven other experts equally skilled, and having equally good opportunities for forming an opinion.

"When the case is looked at, not through the medium of veterinary skill, but in the light of the evidence given by other witnesses, it is still more difficult to arrive at the conclusion that the pursuers' case is proved. About one thing, all the witnesses who have had any knowledge of Bog-spavin are agreed,—viz., that it is incurable and indelible,—a remark that it is necessary to make, because the examinations to which several of the witnesses speak took place months after the day of sale. Now, we find that this mare was bred by the witness Peter Lyle, a farmer, at Bridge-of-Weir, who sold her in June, 1874, in a sound and healthy condition, to the defender, for the sum of £68. She was then sold to Samuel Clark, a farmer, who had been in the horse trade for forty-nine years, at the price of £72, and she had no Bog-spavin with him. The defender purchased her back in August, 1874, from Clark for £78, and again sold her, with a warranty, to John Williamson, a farmer in Dumbartonshire, in September, 1874, at £80; and the latter again sold her to Alexander M'Lachlan, for the defender, in January, 1875, at £85, with a warranty of soundness; and M'Lachlan says he examined her at the time he bought her, and found no Bog-spavin about her. On 3rd February, 1875, the defender sold her to Mr. M'Call, the Principal of the Glasgow Veterinary College, with a warranty, at the price of £86, and Mr. M'Call examined the mare then, and found her to be sound. She turned out to be unfit for Mr. M'Call's business, not being able to stand the smell of blood in the slaughter-house in which she was to be employed, and she was returned by M'Call to the defender after a few days. She was not returned on account of unsoundness, and the suggestion that Mr. M'Call's evidence is not of so much value as it would otherwise be, arising from the fact that he is said to be 'interested' in the matter, seems to be without point. By returning the animal his bias would rather be to justify his proceeding, by leaning to the side of unsoundness. The Sheriff rejects any such suggestion as unfounded, and believes the account of this matter by M'Call, and Brown, the vanman for the Local Authority of Glasgow, as a true statement.

"The sale to Mr. Crole takes place on the 10th February, at £90, and the defender gives the warranty already quoted; therefore, so far as these transactions indicate, this mare was dealt with as a sound animal by those who bought and sold her, down to the time of the sale to the pursuers. There are other witnesses in regard to her history prior to the sale. James Barr, a grocer at Bridge-of-Weir, and Edmund Hardie, calico printer, Kilbarchan, knew the mare when she was in the possession of Lyle, and they never saw her lame, and always thought her sound. And Hardie says that it was upon his recommendation that Williamson bought her at Balloch fair, in September, 1874. But there is better evidence than this from George M'Murray, blacksmith, who often shoed the animal when in the possession of Williamson, and he 'never saw anything lame about it,' nor swelling in the hock of either leg.

"No lameness was discovered between the 12th of February—when she was delivered to the pursuers—and the 26th, the day of the ploughing match. As regards these fourteen days M'Millan says: "Sometimes she was worked a half-day, and sometimes a whole day, prior to the ploughing match on 26th

February. I think that very frequently, or at all events nearly every day, she was put to work. She never worked less than half a day, and on some occasions a whole day.' There are three witnesses—viz., Mr. Crole, Duncan Smith, and Thomas Leslie—who say that the mare at that ploughing match was lame; and Leslie was a member of the committee, and followed the mare up and down the ridge several times. It is to be regretted that Mr. Hinselwood, who called Mr. Leslie's attention to the lameness, was not called as a witness. Here, again, the Sheriff is obliged to decide between conflicting testimony; other persons on the field, with the same opportunities as the three individuals named, did not see any lameness. So says Baillie, who has the farm adjoining the pursuers. This witness speaks to a peculiarity that some other witnesses speak to—viz., that the mare 'went wide behind.' Robert Dickson, a farm manager at Ardrishaig, who was one of the judges at the match, did not notice any lameness or swelling. He thought, however, that Duncan Smith, who was holding her, kept her in too tight, which might have made her fractious. There are five or six other witnesses who were upon the field, and who gave evidence to the same effect. It is unnecessary to analyse or recapitulate what they say.

"The result of the whole matter must therefore necessarily be, that in the face of such a body of evidence for the defence, the pursuers cannot be held to have proved their case. Certainly, having obtained the opinions they did as to the existence of an incurable disease, they were quite justified in endeavouring to get rid of an animal certified upon such high authority to be so afflicted. But, on the other hand, when the case on both sides comes to be disposed of in a court of law, the party upon whom lies the burden of proof must suffer, if he cannot make his case better than to say that his evidence is as good as that of the defenders. It is not to be overlooked that the mare, although sold under judicial warrant, brought £73 at the sale; and animals sold under a cloud, as they are when sold in consequence of a law suit as to their soundness, do not usually bring their proper value. (Initd.) P. F.

ALLEGED BREACH OF THE CONTAGIOUS DISEASES (ANIMALS) ACT.

John Tait, coach proprietor, Stamfordham, was summoned for that he did unlawfully drive on the highway, in the township of Heugh, a horse which was affected with Glanders, on the 19th of October last. A similar charge, for an offence alleged to have been committed on November 8th, was also preferred against Mr. Tait.

Mr. Isaac Baty, jun., appeared for the prosecution, and Mr. W. Taylor for the defence. Mr. Baty said he was instructed to appear on behalf of the local authority, and to prosecute under the Contagious Diseases (Animals) Act, 1869, 57th section.

Superintendent Stephenson, of Hexham, was the first witness called. He stated that he was inspector under the local authority, and from information he received, he went to Stamfordham, taking with him Mr. Anderson, veterinary surgeon. This was on the 12th of September last. He saw the defendant, John Tait, there. He told him he had received information that he had a grey mare in his possession affected with Glanders. He said he wished to see the grey mare, as he had a veterinary surgeon with him for the purpose of examining her. The mare was in a stable by herself. Mr. Anderson inspected the mare, and told Mr. Tait it was a very suspicious case of Glanders, that the mare ought to be kept by herself, not allowed to come in contact with other horses, and not to be brought out on to the public road. Mr. Tait said it was very the hard, as mare had not Glanders. Witness said, "Had you not a mare which was condemned by Mr. Stephenson,

of Newcastle, on the 22nd of July last?" Defendant replied he had. Witness then inquired if the mare had been slaughtered, and defendant said she had. Witness said, "This mare is standing in the same stable, and both mares ran together." He served a notice upon Mr. Tait not to use this mare. Witness left the notice with the officer stationed in the village, P.C. James Telfer. Witness went back on the 18th September, and Mr. Anderson accompanied him. Mr. Anderson told Mr. Tait he was satisfied it was a case of Glanders.

P.C. James Telfer, stationed at Stamfordham, deposed to serving Tait with a copy of the notice produced; he left it at his residence on the 16th September. Defendant afterwards told witness he had got the notice, and asked what it meant. Witness told him he was not to use the mare; he was not to bring it out of the stable. On the 19th October he saw her yoked in a coach, and driven away towards Newcastle. He saw defendant have it out thrice afterwards. Defendant told him the horse was as clear from Glanders as he was. Tait drove a coach to Newcastle, and kept three or four horses.

William Anderson, veterinary surgeon, Hexham, deposed to examining defendant's grey mare on the 12th September, when he thought it a suspicious case of Glanders. On the 12th October he gave it as his opinion that it was a case of Chronic Glanders.

Mr. C. Stephenson, veterinary surgeon, Newcastle, deposed to inspecting a grey mare belonging to Mr. Henry Mullen, at Newcastle, on the 21st July last, and found her suffering from Glanders. That mare was killed. He had inspected Mr. Tait's grey mare, and considered it an exceedingly suspicious case of Glanders.

Henry Mullen, of Sheriff Hill, Newcastle, deposed to buying a grey mare from Mr. Tait in July last. Two or three days after it was condemned as affected with Glanders and slaughtered.

Mr. Hunter, veterinary surgeon, Newcastle, deposed to examining a grey mare belonging to Mr. Tait on Saturday last. Taking into consideration the history of the mare, he should give his opinion that she was suffering from Cdronic Glanders.

P.C. Telfer, recalled, stated that he had seen two grey mares of defendant's running together. One of them he never saw again after the 21st of July, and this was the other grey mare.

In defence, Mr. Robert Bulman, veterinary surgeon, Ponteland, was called. On the 11th October last he went to see a grey mare belonging to Mr. Tait. In his opinion the mare was not suffering from Glanders. He tested her; he galloped her round the field. He had seen her four or five times, and pronounced her free from Glanders.

Mr. Alexander Gillespie, veterinary surgeon, Newcastle, deposed that on the 13th October he examined Mr. Tait's grey mare, and in his opinion she was not glandered. He gave Mr. Tait a certificate to that effect. He still adhered to his opinion, having seen the mare that morning. He had been sixteen years in practice. Witness said there was a simple test by which Glanders could be detected from that of an ordinary case of Nasal Gleet. If they took the discharge from a horse suffering from Nasal Gleet, and dropped it into a pail of water, it would float on the surface, but if they took the pus from a horse that had Glanders, and put it into the water, it would sink to the bottom. The chemical analysis of the one discharge was very different from that of the other. The discharge from a glandered horse contained a very large amount of albumen, which gave it a greater specific gravity than that of water, and caused it to sink to the bottom. The witness had applied this test that morning. It was a scientific test given by Professor Barlow, which had never been found to fail in witness's experience.

After hearing the evidence the magistrates dismissed the case.

Notes and News.

DISEASES IN AUSTRALIA.—We learn by a late Australian mail, that the Diseases in Stock Act, shortly to be laid before the colonial parliament, will deal comprehensively with all diseases. This will meet with general approval, as stock-owners are at last becoming aware of the necessity of some measures being enforced with the view of preventing the alarmingly increasing prevalence of disease. Deaths from Pleuro-pneumonia have been reported from many districts, and the opinion is generally expressed that the destruction of diseased animals, and the careful inoculation of all those exposed to infection, is the only successful means of checking this disease. The necessity for making inoculation compulsory is becoming more favourably entertained. It lies with Victoria to take the initiative, inasmuch as it depends upon N. S. Wales and Queensland for its supply of fat as well as store cattle, and it therefore suffers from fresh introductions of the disease. "Fluke" is engaging much attention, and although opinions vary as to the best means of dealing with this disease, it is generally admitted that Government should be requested to take the matter in hand. Influenza had been unusually fatal among horses in certain districts, a few cases presenting all the symptoms of the American horse-plague. Providing shelter during winter is recommended as a preventive. Ophthalmia, principally occurring among sheep, has been appearing in a serious form, some flocks having as many as fifty per cent. of their year's lambs affected. Many of them become totally blind, others lose one eye. A few cases occurring in cattle and horses had been reported. Poison plants were beginning to appear, and it was feared that with the approach of spring more would be heard of them.

TRANSMISSION OF RABIES BY LICKING.—A young girl has recently perished from Hydrophobia at Bradford, the disease having been induced by a rabid dog licking her face and hands. The animal belonged to the girl's aunt, who had succumbed to the disease, which was contracted through the same dog having bitten her in August last, shortly before it was destroyed. The girl had been fondling the creature before it wounded the aunt; and it is to this circumstance alone that the origin of the malady in her case could be traced.

POISONING BY FLESH.—According to *Il Rinnovamento*, a Venetian gazette published at Zerman, in Venice, in May last one hundred and fifty persons were attacked with cholera-like symptoms after eating of the flesh of some sick oxen belonging to a large proprietor in the locality. At the end of the month several of the sick people had died, while many others were in a very critical condition. An inquiry was pending.

VITULARY FEVER.—In the report of the Conference of the Mecklenburg Veterinary Society, held in 1874, we perceive that, in discussing Parturient or Vitulary Fever, Zander stated that, in the way of treatment, he promptly scarifies the croup or loins, and every ten minutes (for six times) applies thereto a sack which has been dipped in boiling water. In this way he has been successful in saving one-half of his patients.

REMOUNTS FOR INDIA FROM THE CAPE OF GOOD HOPE.—Mr. W. Thacker, V.S., remount agent at Calcutta, is, we learn, on his way back from the Cape. He reports very unfavourably of the prospects of resuscitating the export trade in horses suitable for the Indian market for army purposes. In fact, the breed required may be said scarcely to exist. The stock now produced is adapted for agricultural purposes only, and even in that direction the unhealthy influence of the diamond mania is but too apparent.

MORTALITY AMONG CATS AT DELHI.—There has been a serious outbreak of Cholera at Delhi and the surrounding districts among the human population, and at the same time a remarkable mortality among cats. The doctors in Delhi have expressed the opinion that the disorder among these creatures is similar to Cholera.

"HORSE BLOOM."—Yet one more trouble for the unfortunate men—an increasing class just before November—who want to buy horses. I hear that the dealers have discovered a weed—its Latin name escapes me—which grows in nearly every hedge, which is admirably fitted to get horses into what they call "blooming condition." Unfortunately for purchasers, this said weed is also fitted to bring on heart-disease in horses to whom it is given. Instances could be given of valuable horses which have suddenly dropped down dead from its deadly effects. It seems to act on horses much as colchicum does on gouty men—giving temporary health, but certain and sudden death in the end as a penalty for previous benefits.—*World.*

LOODIANA FEVER.—The form of disease called "Loodiana Fever" has broken out among the horses of the 1st Madras Light Cavalry stationed at Bowenpillay, a suburb of Secunderabad. There have been a few cases also in the other mounted corps. The 1st Cavalry have been ordered to abandon their lines and picket their horses in the open.

DEATH OF THE AMERICAN HORSE, LEXINGTON.—This noted American horse, the sire of a greater number of valuable horses than any other stallion in that country, is dead. He died at Woodburn Farm, Kentucky, at the age of more than twenty-five years. He was foaled in 1850, made and won his first race at Lexington, Kentucky, in 1853, and out of the seven starts which he made in his racing career, he was beaten but once. Since 1855 he was reserved for the stud, first standing at the farm of W. F. Harper for two seasons, when he was sold by his owner, Mr. Ten Broeck, to R. A. Alexander of Woodburn, for 15,000 dols. He had stood at Woodburn since that time. Amongst his most noted progeny are Kentucky, Asteroid, Idlewild, Norfolk, Leatherlungs, Thunder, Arcola, Harry of the West, Daniel Boone, Jack Malone, Harry Bassett, Tom Bowling, Preakness, Joe Daniels, and Wanderer. No other horse in the world, it is asserted, has left such a valuable offspring behind him, and it is somewhat remarkable that in his later years he sired the best of his sons. For some years he has been blind, but has rarely transmitted this defect to his colts.

ANIMAL FOOD.—During the past year 1,068,166 animals of all kinds have been brought to the United Kingdom, representing a decrease of 5·7 per cent. as compared with the number received in 1873. Of this total number 675,103 animals were landed in London, and 153,161 at Harwich. The animals are epitomised as follows:—119,808 oxen and bulls, 38,013 cows, 36,041 calves, 758,915 sheep and lambs, and 115,389 swine. A total of 478,506 cwt. of dead meat was imported into London, consisting of 41,686 cwt. salted and 33,338 fresh or slightly salted beef, 127,198 cwt. salted and 29,666 cwt. fresh pork, 13,289 cwt. of other kinds, salted or fresh, and 233,329 cwt. of meat preserved otherwise than by salting. The total quantity of dead meat imported into the United Kingdom was 968,921 cwt., as compared with 890,139 cwt. in 1873, and 853,255 cwt. in 1872.

EXPORTED HORSES.—A total of 3,050 horses were exported from this country during the past year, of which 258 were sent to Germany, 652 to Holland, 545 to Belgium, 1,238 to France, and 357 to other countries. The value of horses exported from the United Kingdom in the last eight months was £173,982, against £136,813 in the preceding year. To France this year horses to £63,401, and in 1874, £43,606, were sent.

DONKEYS FOR THE PUNJAB.—We learn that six donkeys for the Punjab Government Stud at Rawal Pindi have just passed through Lahore. They have come direct from Gibraltar, and are all over fourteen hands high. Their size astonished all the native gentlemen of Lahore, to whom they were shown. It is stated that the cost of each animal is not less than £250.

ENUMERATION OF THE BLOOD-GLOBULES.—At a recent *séance* of the Academy of Medicine, MM. Hayem and Nachet presented a note on a new method of counting the blood-corpuscles. This procedure possesses the advantage of being extremely exact, and is accomplished by means of a small cell, the height of which is mathematically calculated, and in which the drop of blood should not touch the margin. The blood-corpuscles reach the centre of the cell, and this renders their enumeration easy.

EXPORTATION OF HORSES.—In the last ten months the value of horses exported was £214,848, against £175,944. To France in 1875 the export was valued at £79,446.

FOREIGN VETERINARY SCHOOLS AND ZOOTECHNY.—On the Continent it has long been recognised that a most important section of veterinary education is that pertaining to a knowledge of the breeding, rearing, improving, feeding, and managing the animals which are of most value to man, and this recognition has lately been assuming a practical form. In addition to the agricultural schools in France, where highly trained veterinarians, like M. Sanson, are teachers, some time ago the old imperial farm of Vincennes was annexed to the Alfort National Veterinary School in order that the students in the latter might receive practical instruction in "zootechny," as our French colleagues have named this division of their education. We now learn that the Lyons National School has also been provided with a farm for the same purpose; and the Turin Veterinary Journal (*Il Medico Veterinario*) announces that, by virtue of a Royal decree, dated October 7th, 1874, an establishment for experimental zootechny is to be added to the Technical Institute in the province of Emilia. In it are to be carried on comparative experiments on reproduction, rearing, feeding, and the management of the domesticated animals, in order to demonstrate absolute or relative utility, and to undertake comparative experiments on fattening and the improvement of races. This establishment is to be under the management of a director, who is to be assisted by a professor of chemistry, with the title of vice-director, and a veterinary professor and agriculturist—all to be selected by the Minister of Agriculture. A number of young men who have received the diploma of veterinary surgeon are to be admitted as pupils, with a view to their participation in the researches which are to be carried on, and to be instructed in the principles of practical zootechny.

STATISTICS OF HORSES IN BAVARIA.—In 1873, Bavaria possessed 353,849; 46,307 of these were under three years old, 15,228 from three to four years old, and 292,214 from four years old and upwards. These figures give for the entire kingdom 72 horses to every 1000 people, and 406 to every square kilometre (about 1¾ miles). The 307,342 horses above three years of age were classed according to sex as follows: 19,464 stallions, 122,242 geldings, and 16,563 mares. According to their utility, there were 802 stallions for stud purposes, 260,425 agricultural horses, 29,427 draught horses, 4,354 harness and saddle horses, and 12,334 in the army.

ANIMAL FOOD.—From a recently-issued public document, it appears that during the past year there have been large importations of foreign cattle. With the exception of swine, there has been an increase. The declared value of oxen, etc., was £3,325,025; cows, £867; calves, £169,237; sheep and lambs, £1,904,803; and swine, £234,310.

HORSES FOR WAR IN GERMANY.—Enumerating the resources which Germany possesses for the supply of horses required for military purposes, a Berlin journal remarks that the number of remounts for the German army, exclusive of the Bavarian, Saxon, and Wurtemburg forces, has been fixed at 6,549 for the present year. Each regiment of cavalry receives 63, and each regiment of artillery 56. In Saxony and Wurtemberg the horses required for the army are, out of motives of economy, privately purchased by the contractors. The same system is adopted in Bavaria, the young horses being sent to the remount depôts until they are thoroughly fit for service. At the end of last year the province of Prussia contained 531,831 horses; Silesia, 256,467; Brandenburg, 235,987; Posen, 194,000; Pomerania, 172,181; the Rhine Provinces, 134,256; Westphalia, 115,674; Hanover, 186,715; Sleswick-Holstein, 134,144; and Hesse-Nassau, 65,255. There were 78,538 horses in use for the army. Prussia alone contained 2,280,606 horses, while the total for the whole of the German empire was 3,352,231.

A HUMANE POLEAXE.—At the Intercolonial Exhibition held at Victoria, Australia, in September last, a somewhat novel idea embodied in a small but excessively heavy instrument called the "humane poleaxe," invented and exhibited by Mr. Graham Mitchell, veterinary surgeon to the Society for the Prevention of Cruelty to Animals, was found to be deserving of special notice, as it will cause a revolution in the present barbarous system of slaughtering animals, viz., by the old poleaxe, which simply penetrated the brain without causing insensibility, so that a cane three feet long is necessary to break down the substance of the brain and spinal matter before life becomes extinct. By using the "humane poleaxe," insensibility is at once produced, and the use of the cane dispensed with. All the latest suggestions on the slaughtering of animals, we are told, have been analysed and combined in this instrument.

AMERICAN DOGS.—The *St. Louis Globe Democrat* calculates that the dogs of the State of Missouri represent a waste of $80,000,000, and that if this sum were invested at compound interest, their worthlessness would pay off the national debt before A.D. 1900.

A TEST FOR SHEEP-WORRYING DOGS.—The report of the district veterinary surgeons in Wurtemburg for 1874 makes us acquainted with a novel device for discovering dogs which have been worrying sheep. In February of that year, a dog attacked a flock of sheep during the night, and killed eleven. The shepherd reported the circumstance to Veterinary Surgeon Osterstag, who soon after discovered a dog which, from its general appearance and muddy condition, he suspected to be the culprit. He accordingly resolved to test his suspicions by giving it an emetic; the effect of which was to bring up some flesh and an ear, corresponding to that of one of the sheep which had been partially devoured. Another dog was suspected, and to this the same test was applied, but the creature only vomited potato food. In the law-court to which the case was taken, the owner of the first dog had to pay for the whole of the worried sheep.

THE REINDEER.—How wonderfully the reindeer sped over these swaying bogs, where a man would sink in a second to his waist, and in ten seconds to his neck! how their broad elastic hoofs expanded like camels' feet! They are splendid creatures; their motion is awkward, and their rounded bodies, slender legs, bulging hoofs, heavy mossy horns, and down-hanging heads are not pretty to look at; their bellow is exactly like the grunt of a pig, but their eyes and dark mouths and nostrils are beautiful. They are surprisingly intelligent and sagacious when trained, and as enduring as the Ship of the Desert.—*Rae*, "*The Land of the North Wind*," p. 261.

TYPICAL SKELETONS.—We learn from *Harper's Weekly* that Professor James Law, M.R.C.V.S., of Cornell University, has applied for the skeleton of the trotting mare "American Girl," to be placed in the university museum as that of a typical trotting horse.

CRUEL CARELESSNESS.—Many sportsmen, says the *Charleston News and Courier*, will be sorry to hear of the death of the famous setter Bismarck, the representative hunting dog of America, the property of David Brooks, of Philadelphia. The dog had been hunting in Iowa, and was put in a box and expressed to New York, but, by the negligence of the employées, he was surrounded by heaps of goods and was suffocated. The dog was known to sportsmen all over the world. There was a standing challenge to all the setters of Great Britain to hunt with him on American ground for 1,000 dollars a side.

PROTECTION OF ANIMALS IN DENMARK.—A Society for the Protection of Animals has been established at Copenhagen, with the Crown Prince of Denmark for its President.

POISONING OF CATTLE IN AUSTRALIA BY DROSERA OR SUNDEW.—The *Australasian* calls attention to the occurrence of cattle poisoning by a very common species of *Drosera* or Sundew, which grows luxuriantly in some districts of South Australia. When eaten in any considerable quantity, it causes death, the symptoms being very urgent and indicating intense pain. The plant is usually in blossom about October; it is covered with minute hook-like hairs, which are likely, the *Australasian* thinks, to cause irritation, independent of any chemical action of the juices.

THE FRANCO-GERMAN HORSE TRADE.—Some interesting statistics on the Franco-German horse trade were recently read by M. Quivogne, a Lyons veterinary surgeon, before the Scientific Congress at Nantes. The compiler stated that although it was at France that the German veto against horse exportation was directed, it was not France which during the past four years had been drawing horses from Germany, but, on the contrary, Germany which had been importing enormous supplies from France. During the past three and a half years the last-named country had exported no fewer than 74,885 horses, and 15,262 of these had been sent direct to Germany, 14,875 to Belgium, 8,555 to Switzerland, and upwards 20,000 to England. Before 1870-1 Germany took from France on an average only 1,500, Belgium 500, and England less than 400 horses per annum. Belgium and Switzerland never before took so many French horses as during the period under review, and these had evidently only been taken for transit to Germany. Adding, therefore, the Belgian and Swiss imports to the number sent direct to Germany, a total of 38,690 appeared, representing a yearly average of 13,000 French horses purchased by Germany. On the other hand, France had imported from Germany during the same period only 8,947 horses, or about one-fourth of the number taken by Germany from France. Many of the horses sent from France to England, moreover, ought properly to be placed to German account, as these had served to replace the English exports to Germany. M. Quivogne remarked further that there had not been, and was not then, any real consumptive demand for French horses in Germany, and he urged that the German Government, in interdicting the export of horses from German territory, and at the same time importing largely from France, clearly designed to weaken the latter Power still further, and to increase the difficulties attending the reorganisation of her army. He added that France lost directly through the war about 100,000 horses, and indirectly about 300,000 horses. The Government ought, he said, to follow the German example, and forbid further exports.

ROYAL COLLEGE OF VETERINARY SURGEONS' EXAMINATIONS.

At the examinations held in Edinburgh by the Royal College of Veterinary Surgeons, on December 23rd, the following gentlemen were admitted members of the profession :—

EDINBURGH VETERINARY COLLEGE.

Mr. James Cowie, Banffshire.
" Joseph Harper Hutchin, Liverpool.

GLASGOW VETERINARY COLLEGE.

" George H. Elder, Cupar Angus.

The following students from the Royal Veterinary College passed their "First Examination" :—

Mr. James Bayes
" George Frederick Flavell
" Percy Boulton Spooner
" Harold Leaney
" George Hammond Harris
" Sidney Hill
" Laurence Clarke Tipper
" James Edward Overed
" William Garrard
" Philip Vincent
Mr. George Henry Caunter
" William Timothy Carmody
" Walter Vernon Tuson
" Robert Moreton
" Edward Montague Davy
" William Donald Gunn
" George James Brooker
" Charles George Poulton
" Henry Turner Challinor
" Joseph Mason
Mr. Charles Syrett Syrett.

ARMY VETERINARY DEPARTMENT.

Gazette, January 4th, 1876.

ROYAL ARTILLERY.—Veterinary Surg. Peter Moir resigns his commission.

VETERINARY DEPARTMENT.—Veterinary Surg. Frederick Fitzhugh Marshall, 14th Hussars, to be Veterinary Surg. of the first class; Veterinary Surg. George Agnatius Amos Oliver, Royal Artillery, to be Veterinary Surg. of the first class.

Veterinary Surg. P. Moir, C Brigade, R.H.A., who has resigned his commission, was appointed Acting Veterinary Surg. June 14, 1864. His appointment was confirmed in 1867, when he was gazetted into the Royal Artillery and posted to A Brigade R.H.A., in India. About two years ago he joined the C Brigade, a vacancy in which is created by his retirement.

Veterinary Surg. Marshall has embarked with his regiment, the 14th Hussars, for India.

Veterinary Surg. G. A. A. Oliver, A Brigade, R.H.A., has arrived home from India.

Veterinary Surg. J. Hume, on arrival in India, has been appointed to do duty at Seetapore, and Veterinary Surg. R. D. Graham at Ferozepore.

Obituary.

On the 3rd January, 1876, William Black Edmonds, Veterinary Surgeon 5th Royal Irish Lancers, died at Aldershot, aged 31 years, quite unexpectedly and deeply regretted. Our deceased friend had only recently returned from India, where he had been stationed for a number of years. When on leave in the Isle of Wight, he met with an accident by which he sustained a slight injury to the temple, but which he thought nothing of at the time. Returning to Aldershot, he found himself compelled to take to his bed. He was seen by the doctor on Saturday, January 1st, and again on Sunday, when he was not considered to be in a dangerous condition; but during Sunday night a change for the worse occurred, and on Monday morning he expired, greatly lamented by his brother officers. The deceased graduated April 25, 1864, was appointed Acting Veterinary Surgeon June 14, same year; and on his appointment being confirmed; in 1867, he was gazetted to the Royal Artillery, and posted to D Brigade R.H.A., with which he did duty in India until August 3, 1870, when he obtained transfer to the 5th Lancers. Mr. Edmonds was the only son of a widowed mother, and great sympathy is expressed for her in her bereavement.

We have also to add the names of the following members, whose demise has been announced anonymously: Samuel Gatward, Wangford, Suffolk, who graduated April 24, 1867; and Robert Hammond, of Bungay, Suffolk, whose diploma is dated May 17, 1855, and who died in India in 1868.

France has sustained a heavy loss by the decease, on October 24th, aged sixty-five years, of Professor Rodet, Director of the Lyons Veterinary School for twelve years, after a long and, towards the last, a painful illness. M. Rodet entered the Lyons School as a student in 1828, and graduated in 1832, having so distinguished himself during his studentship as to indicate his capacity for the office of teacher. After serving for some time in the army as a veterinary surgeon, as the result of a brilliant competition he was appointed *Chef de Service* at that School in 1834; after another equally meritorious competition in 1838, he was elected Professor at the Toulouse Veterinary School, whence he was transferred again to Lyons in 1848, and was decreed Director of his *Alma mater* in 1863, on the retirement of Lecoq. The chief object of his life appears to have been to raise the scientific status of his profession. The long prevalent, and still prevailing, opinion that veterinary schools should banish pure science from their curriculi, and only teach what is commonly designated "practice"—*i.e.*, consequences without principles—had no weight with him. He believed that professional teaching was of little value unless it proceeded from a close alliance between practice and science; and to this belief is due the circumstance that the Lyons Veterinary School is to-day perhaps the most perfect in its tuition of all the European schools. He laboured incessantly to improve the establishment in every way; and it is now said to be one of the finest on the Continent. Through his exertions, a splendid monument was raised to Bourgelat in this school, which that illustrious veterinarian founded, and which was the first established institution for the cultivation of veterinary science. So earnestly and so successfully did Rodet promote its welfare, that he has been styled the second founder of the Lyons School. An excellent teacher, a member of many learned bodies, and taking a leading part in agricultural affairs, he was greatly esteemed by all who came in contact with him in either his official, scientific, or private capacity. The success of his colleagues in literature or science was always a source of the greatest delight to him, and he had no

other care than the interests confided to his charge. These were so numerous, and he was at the same time so disinterested, that only too frequently he had to withdraw himself from scientific work. Possessed of very extensive and varied acquirements, at the commencement of his career he filled the chair of botany, and notwithstanding his great aptitude for medicine, botany and some of the accessory sciences more particularly received his attention. For his students he published several text-books; two of which—the *Leçons de Botanique élémentaire*, and the *Traité de Botanique agricole et medicale*—have passed through many editions. His style, simple and correct, and easy to understand, was always scientific and practical. In 1857 he was named a Chevalier, and in 1872 an officer of the Legion of Honour. His funeral was conducted at the expense of the State, and appears to have been very imposing. It was attended by M. Bouley, inspector-general of the veterinary schools; Lecoq, retired inspector-general; Rey, dean of the Lyons School; the presidents of the Agricultural Society of the Rhone, and the Council of the Prefecture, representing the administration; several generals; and nearly all the medical faculty of Lyons, as well as the civil and military veterinary surgeons, and the staff and students of the School. A detachment of Infantry, commanded by a Captain and Lieutenant, rendered the last honours bestowed on an officer of the Legion of Honour; while General Bourbaki, attended by one of his *aides de camp*, attended the religious ceremony in the chapel. M. Bouley, who had been delegated to represent the Minister of Agriculture, delivered a very eloquent *éloge* at the grave, as did also Professor Rey and others.

Correspondence, etc.

VETERINARY INSPECTORS IN IRELAND.

To the Editor of the VETERINARY JOURNAL.

SIR,—Now that the question of Cattle Inspection, etc., is so much before the public, and that during the recent numerous discussions on that subject, the veterinary surgeons employed as cattle inspectors by the Irish Veterinary Department have been invariably spoken of in the highest terms as to their general courtesy and efficiency, it may be right to mention one or two of the grievances those gentlemen labour under. Not the least of these is that no leave of absence is granted to them. Now, considering that inspectors are employed at all hours, in all kinds of weather; and from the nature of their duties—they being generally covered with mud, etc., and often for hours working in damp clothes—surely some interval of vacation is a matter of necessity. But if only one day's leave of absence is asked for, there ensues a series of petitions, signatures, and grumblings before it is granted; and, after all, the miserable pay is stopped, even though the absence is caused by sickness, which may be readily enough contracted under the above circumstances. Again, it is certainly a discouraging state of affairs that Irish inspectors a e not paid for Sundays; and, still worse, the Department requires them to do duty on those days, and often the greater part of Sunday nights, and attend as usual next day; but yet will not allow any remuneration for this extra work, though it has been applied for frequently. The present manner of treating the employés of the Irish Veterinary Department is in very great contrast, in every respect, to the treatment of their brethren on the

English Staff, and is not calculated to render them enthusiastic in the performance of their important and very onerous duties. Trusting you will find space for this letter in your valuable and popular journal,

I am, sir, your obedient servant,
PHILIP T. KIRWAN.

Templemore, Co. Tipperary,
Dec. 20th, 1875.

CORRIGENDA.

In our last number, page 69, line 4, substitute "six months" for "three months;" and at page 71, line 26, instead of "ioment," insert "steam."

ANSWERS TO CORRESPONDENTS.

A. J. W. is thanked for his remarks. The subject of so-called "Typhoid Fever" in pigs will be noticed at an early opportunity. In the meantime, it may be sufficient to state that the resemblance of this malady to the Typhoid Fever of man is very superficial, and that, anatomically, the differences are most marked. Experimentally, it has not, in recent attempts, been proved to be communicable to other pigs by ingestion of the diseased intestines or their contents.

SENEX's request will be attended to in a forthcoming number.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from J. T. Roberts, Long Sutton; Dr. A. Voelcker, London; G. Wyer, Donington; S. Lambert, Stretford; Philip T. Kirwan, Templemore; Professor Liautard, New York; Professor McCall, Glasgow; T. Paton, Army Service Corps, Dublin; Miss Dick, Burntisland; Professor Bouley, Paris; Professor A. Smith, Ontario; "Five Points"; A. Broad, London; B. Mc Innes, Charleston, U.S.A.; Professor Williams, Edinburgh; Prosessor Walley, Edinburgh; Staff Veterinary Surgeon J. Collins, Dublin.

BOOKS: *Professor Bentley*, Botany; *Professor Voelcker*, Root Crops as Affected by Soil, Manure and Climate; On the Chemical Composition of Phosphatic Minerals used for Agricultural Purposes; *Professor A. S. Taylor*, Action of the Poison of the Cobra di Capello; *R. Ableitner*, Das Kriegspferd im gesunden und kranken Zustande; *L. Buonsanti and G. Pini*, Dizionario dei Termini, etc., delle Scienze Mediche e Veterinarie (Fasc. 5); *Professor Zürn*, Die Schmarotzer auf und in dem Körper unserer Haussäugethiere; *W. Williams*, The Principles and Practice of Veterinary Surgery.

JOURNALS: *Live Stock Journal; Wochenschrift für Thierheilkunde und Viehzucht* (6 numbers); *Veterinarian; Annales de Méd. Vétérinaire; Archiv. für Wissenschaftliche und Practische Thierheilkunde; Repertorium der Thierheilkunde; Der Thierarzt; Bulletin de la Société Centrale de Médicine Vétérinaire; Recueil de Médicine Vétérinaire; Deutsche Zeitschrift für Thiermedicin*, etc.

NEWSPAPERS: *The Lincolnshire, Boston, and Spalding Free Press; Land and Water; Harper's Weekly; Toronto Leader; Australasian; Charleston News and Courier; Paisley Gazette; Perthshire Constitutional and Journal; Toronto Globe; Wilts and Gloucestershire Standard; Landwirthschaftliche Reichs-zeitung; Toronto Mail; Freeman's Journal.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.